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MARCH 1897.

THE OPHTHALMIC RECORD

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The April number of the OPHTHALMIC RECORD will contain (among others) a report of the proceedings of the Western Ophthalmological Association, an original paper by Alvin A. Hubbell, Ocular Palsies from Injury; one by Dr. F. T. Rogers, a Case of Persistent Retinal Impression following the Use of the Sextant; one by Dr. John E. Weeks, a Case of injury to the Oculo-Motor Nerve, followed by Paralysis. There will also appear reviews of the most recent contributions to Ophthalmology published here and abroad, book notices, editorials by prominent Ophthalmologists, society reports and miscellaneous items of interest.

The Record particularly desires short, practical papers on any subject connected with Ophthalmology. These will be published at as early a date as possible. It is understood that, unless otherwise arranged, original articles when accepted are contributed to the Record exclusively. Illustrative cuts will be made at the expense of the journal and proofs for correction will be sent to authors when desired. Reprints with covers are furnished at cost. One hundred of these will be presented to authors *gratis* when a request for them is written on the original manuscript. The Record will be issued monthly and each number will contain about 54 pages of reading matter.

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TABLE OF CONTENTS.

I. ORIGINAL ARTICLES.

1. The Influence of Nasal Disease in Modifying the Quantity and Axis of Corneal Astigmatism, *by* LOUIS J. LAUTENBACH, M. D., *Philadelphia*, - - - - - - - - - 109
2. A Case of Amblyopia from a Large Dose of Quinine Sulphate, *by* HERBERT HARLAN, M. D., *Baltimore, Md.* *Illustrated* - 113
3. Note on the Use and Non-use of the Occlusive Bandage in Cases of Heterophoria, *by* F. W. MARLOW, M. D., *Syracuse, N. Y.* - 115
4. Tobacco Amblyopia in a Woman, with Anomalous Scotomas, *by* G. E. de SCHWEINITZ, M. D., *Philadelphia*. *Illustrated.* - 118
5. Advancement Preferable to Simple Tenotomy, *by* H. McI. MORTON, M. D., *Minneapolis, Minn.* - - - - - 123
6. An Interesting but Disastrous Termination of a Cataract Operation, *by* DAVID H. COOVER, M. D., *Denver, Col.* - - - 126
7. Treatment of Strabismus in Childhood, *by* C. M. HOBBY, M. D., *Iowa City, Iowa.* - - - - - - - - 127
8. Penetrating Wounds of the Iens. Report of four Cases, *by* H. BERT ELLIS, M. D., *Los Angeles, Cal.* - - - - 131

II. CLINICAL NOTES.

1. Foreign Body in the Canaliculus—Prescribing Atropia in old People, *by* WM. E. BAXTER, M. D., *Boston, Mass.* - - - - 134

III. CORRESPONDENCE.

1. Dr. Gould's Sulcus Syringe - - - - - 134

IV. REVIEWS.

1. Study of an Epidemic of Acute Purulent Ophthalmia, and of its Cause—the Bacillus Septatus, *by* DR. TH. GELPKE, M. D., - 135

V. SOCIETY REPORTS.

1. Chicago Ophthalmological Society, - - - - - 145
2. Section of Ophthalmology, *College of Physicians Philadelphia*, - 150

VI. EDITORIALS.

1. A Plea for the More General Use of the Ophthalmoscope. - 156
2. How Shall we Treat the Optician? - - - - - 157
3. What Shall be Done with the Optician? Another view of the Matter. 159
4. The Regulation of "Optometry" in New York State. - - 160

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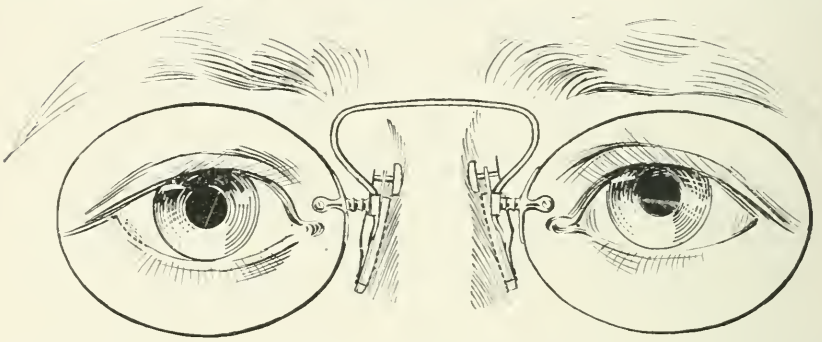

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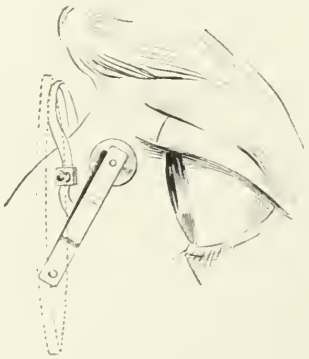

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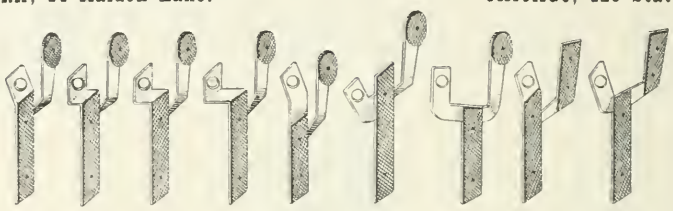

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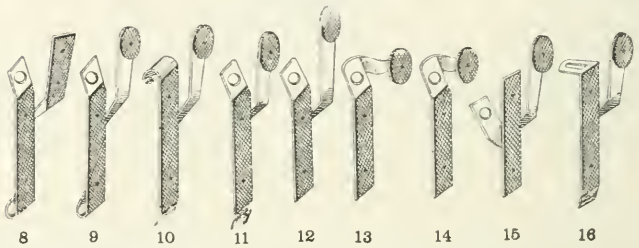

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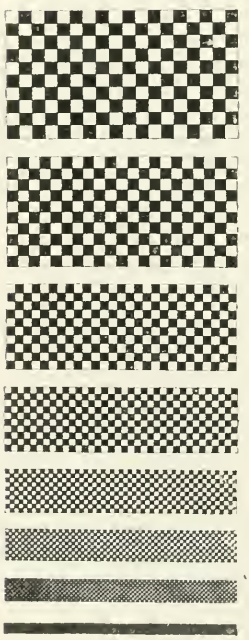

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THE

OPHTHALMIC RECORD

VOL. VI. CHICAGO, MARCH, 1897. NO. 3. NEW SERIES.

ORIGINAL ARTICLES.

THE INFLUENCE OF NASAL DISEASE IN MODIFYING THE QUANTITY AND AXIS OF CORNEAL ASTIGMATISM.

By LOUIS J. LAUTENBACH, M. D.
Philadelphia.

The regular and systematic recording of the corneal curvatures is not only useful but is exceedingly interesting and often instructive, shedding light upon obscure conditions and presenting for solution new problems which otherwise had not even been recognized. Having for some years made it a rule invariably to study the corneal surface at the visual pole, recording the axis of greatest and of least refraction, the diopters of refractive difference, and the diameters of curvature, I have, I believe, determined that pathologic conditions of the nasal organs sometimes influence corneal refraction and corneal astigmatism.

In a paper read before the American Medical Association in 1895,[1] I presented in an amplified form some observations placed before the Phila. County Medical Society [2] the preceding year, and endeavored in addition to explain in the simplest way possible, the production of the normal corneal curvatures and their pathological departures. I explained the production of the corneal curves and of normal astigmatism in a purely mechanical manner, claiming that the corneal surface

1. On the Local and General Conditions that Change Corneal Curvatures. Read in the *Section of Ophthalmology* at the *46th Annual Meeting of the Amer. Medical Association*, May 7-10, 1895
2. Some observations on Corneal Astigmatism and Conditions that Change Corneal Curvatures. *Read before the Phila. County Medical Society*, June 27, 1894.

is the result of numerous pressure forces upon the eye ball, acting from within as well as from without; that the growing function of the cornea was to some extent controlled by the pressure from within the globe—the ball's tension and the action of the ciliary muscle—and also by pressure from without—the tension of the contents of the orbital cavity and that exerted by the motor muscles as well as the pressure of the eyelids. That as a result of the perfect adaptation of these various forces, we have produced corneae of perfect curves. That when from disease, accident or otherwise any of these counteracting forces became either too weak or too strong, we had produced abnormalities of the corneal curvatures with abnormal astigmatism in axis or degree, or both. That these alterations of curves were either temporary, progressive or permanent, depending upon their causation.

Since this presentation of the subject, I have become more and more convinced of the influence exerted by nasal diseases upon the cornea. It has become more deeply impressed because of the fact that when this connection is determined, improvement follows almost invariably upon relieving the nasal conditions.

In studying my cases of astigmatism with the rule, I have observed that the axis of least refraction when not exactly vertical is more often to the outer (between 45° and 90° in the right eye, and between 135° and 90° in the left eye) than to the inner side of this axis—in my last hundred cases the proportion is 55 to 45. I find almost all of these cases present catarrhal disease of the nasal fossae. In those cases where the axis presents to the outer side of 90°, the disease is almost invariably in the nature of thickenings, hypertrophies and polypi; whereas, in the other group, the axis presenting within the vertical line, atrophic conditions as well as nearly normal nasal fossae were far more common. As yet I am not absolutely sure as to the factors determining the swinging inwards or outwards of the axis of least curvature, but strongly suspect it to be due to nerve stimulation manifesting itself in an increased action of the oblique muscles. In these cases I have obtained, after thorough nose treatment, a change in the axis of from 5° to 20° toward the vertical. While this change in the nasal conditions is occasioning a return to a normal corneal axis, it is often observed that the patient's eye symptoms change correspondingly. The head pains, asthenopia, photophobia, giddiness, sick stomach and eye aches vary in intensity, and the glasses which may have been perfectly comfortable when the patient first presented himself, often become useless or even painful.

Often in consequence of this apparent excess of eye symptoms following the institution of nasal treatment, patients become discouraged and dissatisfied and even seek another physician, fearing that their refractive error has not been properly corrected, only to receive a glass which within a few months proves useless. Many of the chronic glass changers, undoubtedly, are simply cases of varying astigmatism caused by nasal disease. It is not at all uncommon to find a patient, wearing constant glasses, presenting himself with nasal symptoms which suggest that the "off" axis astigmatism discovered, has been thus occasioned, there being no symptoms to suggest anything wrong with the glasses. As the nasal treatment progresses toward the third or fourth month, eye symptoms appear and by the ophthalmometer we find a change of from 5 to 15 toward the normal axis, with often a change in the amount of astigmatism: the removal of the nasal irritation has allowed a return to a more normal and evenly balanced condition of the eyeball. Such histories are not uncommon. It is often hard to so thoroughly explain this condition to the average patient as to make him see the purpose and value of the nasal work, and in the face of apparent discouragement, persist for a matter of, perhaps, months in following out the nasal treatment.

To explain the phenomena above indicated, it is but necessary to call attention to the intimate relation existing between the blood vessels of the nasal cavities and those of the eye and its appendages, especially their anastomoses; the direct mucous connection of these organs through the ductus nasalis; and especially to direct attention to the intimate relations which exist between the nervous supply of the nose and that of the eye. The fossae of the nose are supplied by the nasal branch of the ophthalmic nerve of the trifacial, branches of which supply the eye appendages and eye ball—one of the branches of the nasal nerve is the long root of the lenticular ganglion, while the inferior oblique branch of the motor oculi (supplying all the eye muscles except the external rectus and superior oblique) forms the short root. The trochlear nerve, which supplies the superior oblique muscle, arises close to the origin of the trifacial and is connected with this nerve at its origin by a transverse band. It is often blended with the ophthalmic division of the trifacial and occasionally gives off a branch to assist in the formation of the lachrymal nerve. The abducens nerve, which supplies the external rectus, is joined by a filament of the ophthalmic. We thus see that the two muscles which govern the motion of the eyeball on its axis, the superior and inferior oblique,

are supplied by the oculo-motor and trochlear nerves, which are directly connected with the nasal branch of the ophthalmic, the former by means of the lenticular ganglion, and the latter through the connection at its origin as well as in its course to the ophthalmic and lachrymal branches.

The superior oblique muscle by its over action occasions temporal deviation of the lower and of the normal vertical axis, while the inferior in like manner causes nasal deviation. The oculo-motor abducens, ophthalmic and nasal nerves being related as described the recti muscles are seen to be subject to modifications of action from irritations presented at the nasal nerve endings. It can readily be seen that any disturbance of the peripheral ends of the nasal nerve can affect either of the oblique or any of the recti muscles, and that a change of axis can be occasioned by over or under action of either or both oblique muscles, while the quantity of the astigmatism can be varied either by the nasal irritation being transmitted to the recti muscles or the oblique muscles, or to both.

The realization of the occurrence of these alterations in the axis and curvatures of the corneal meridians as due to disease of the nasal cavities will, I am sure, serve to throw light on many a hitherto obscure or misunderstood experience, and will allow us to give our patients more accurate and positive results in a line of cases which hitherto have proved so discouraging to both physician and patient.

A CASE OF AMBLYOPIA FROM A LARGE DOSE OF QUININE SULPHATE.

By HERBERT HARLAN, A.M. M.D.
Of Baltimore

ILLUSTRATED.

J. T. G., Age 34, house painter by trade, has been for a number of years a frequent inmate of various hospitals in this city. He gets drunk frequently and on several occasions has taken large doses of laudanum and once, some years back, in a fit of despondency he took a dose of aconite with suicidal intent.

On Nov 16, '96 when he had been drinking some, but by his own account was not drunk, he went into a drug store and asked a kindly disposed druggist for some medicine to relieve a pain in his side. When the druggist went back to get him something he pocketed from the counter a bottle containing 100 two grain pills of sulphate of quinine, put up by McKesson and Robbins. After leaving the store he took a handful of these pills, a little later he took some more and perhaps an hour later he finished the bottle along with a glass of beer. This was about 2 p.m. A half hour later feeling a peculiar rumbling in the head he went to another drug store and obtained an ounce of laudanum. This he took at once and then made his way to the Good Samaritan Hospital where he stated that he had taken laudanum and asked to be admitted and to have something done for him. His story did not receive much credence but after a little he fell unconscious in the vestibule. He was then taken in hand. His stomach was pumped out and the contents unquestionably contained laudanum from the odor. He was also given some permanganate of potassium and and $\frac{1}{120}$ gr of atropia hypodermically. It was noticed that his pupils were dilated. This was about 5 p.m. He came around after awhile and was put to bed in the ward. Next morning he seemed well but claimed to be entirely blind and his pupils were widely dilated. The visiting physician knowing the man and knowing nothing of the quinine thought he was malingering and that the dilated pupils came from the atropia. He passed no urine until the morning of the second day. The small quantity then passed was tested for albumen and none found. On this day he first told of having taken 200 grains of quinine which at once made the diagnosis clear.

On Nov. 20th I was asked to see him and take charge of the case. He was then entirely blind, without any recognition of the light from the ophthalmoscope mirror. The pupils were widely dilated. The nerves were white and the vessels of the fundus diminished to the merest threads. There was no red spot at the fovea but the retina had the appearance caused by embolism of the central retinal artery. It was not perfectly transparent. It appeared to me, with the ophthalmoscope, as a retina does in an eye that has been removed from a man some hours dead.

Stychnine was ordered and a prognosis given favorable to the restoration of useful vision.

I was out of the city for a week following and saw the case next on Nov 30th. Then the pupils were still dilated but responded slightly to bright daylight and he had some telescopic vision. For instance when I held my outstretched hand 6 inches from his face he failed to see it at all but saw and correctly located one of my eyes between the fingers and he saw the position of the nurse's hand across the room.

Dec. 10th his central vision was R $\frac{15}{29}$ and L $\frac{15}{24}$—and better, $\frac{15}{24}$, with the two eyes. The fields were as shown in the cuts.

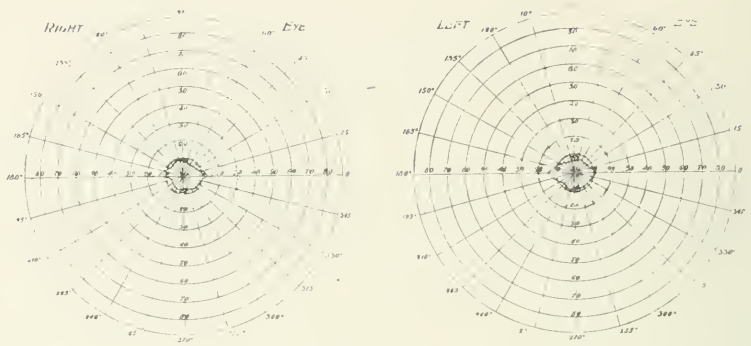


Fig. 1.

Dec. 10th, 1896. After 24 days.

He read Jaeger No 4 and matched colors perfectly.
Dec 17th, VR $\frac{15}{29}$ L $\frac{15}{16}$ and fields as shown in the cuts.

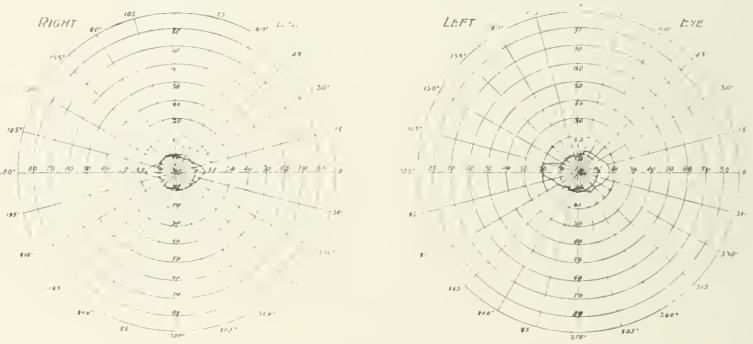


Fig. 2.

Dec. 17th, 1896. After 31 days.

January 6th 1897, VR $\frac{15}{24}$ and L $\frac{15}{16}$. Color sense was limited to the very center. He read Jaeger No. 1 readily and his field had greately improved.

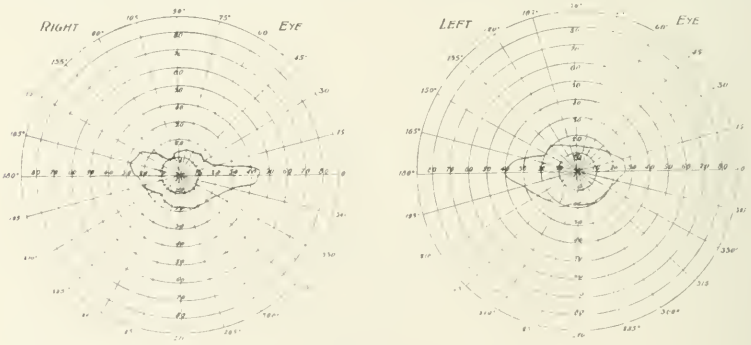


Fig. 3.

Jany. 6th, 1897. After 50 days.

The strychnine was not well borne and was not continued after the first week. He complained several times of pain in the epigastrium and had one or two attacks of nausea, but I would say that except for the eyes he has been in about his normal condition since the second day after taking the quinine.

There is plenty of literature on the subject of amblyopia from large doses of quinine, but I find so many physicians unaware of the existence of such a thing that I think such a very typical case with the characteristic and slowly improving fields of vision is worthy of record.

I may add that a visit to the drug store referred to disclosed a number of bottles of quinine of the kind described in a location convenient for appropriation by such customers.

NOTE ON THE USE AND NON-USE OF THE OCCLUSIVE BANDAGE IN CASES OF HETEROPHORIA.

BY F. W. MARLOW, M. D.

Of Syracuse, N. Y.

Professor of Ophthalmology in the College of Medicine of Syracuse University.

(*1*) The onset of convergent strabismus during the wearing of a bandage for injury or disease in childhood, or during any affection which temporarily prevents binocular vision, is not uncommonly observed. A considerable increase in the degree of the heterophoria, and more especially an increased interval, between the induced double images is often observed when a bandage has been worn for two or three days after a tenotomy which, at the time of operation, apparently corrected nearly the whole manifest error. From a consideration of these two facts it would seem probable that (the annulling of the binocular function by) the total exclusion of one eye from vision for a few days would be likely to render manifest any latent heterophoria present. The following case lends strong support to the idea, and also shows how completely spasm of the extrinsic muscles may obliterate all trace of heterophoria.

G. W. S. Age 35 years. Some years ago suffered from asthenopia and occasional diplopia, for which he was treated by Dr. George T. Stevens, who exercised the muscles and ordered glasses correcting refractive error. Diplopia ceased. Recently he burned the eye lids of the right eye with molten iron, necessitating the closing of the eye with a bandage for a week. At the end of that time, I examined the condition of his refractive and muscular equilibrium, as he was again complaining of some asthenopic symptoms. I found R. hyperphoria 1° to 2°, exophoria 5° to 6°. The bandage was discontinued. He had noticed, on

removing it to dress the eyes, occasional diplopia, and remarked that he thought his old symptoms were coming back again.

I examined again seven days later, and found no muscular error whatever. The rod test and red glass, Steven's phorometer, and the parallax test showed orthophoria. 1° pr. placed in any direction destroyed the orthophoric condition.

Was this a case of heterophoria, or were the errors of equilibrium present after the week's exclusion, temporary conditions due to the pressure (light) of the bandage?

Taking into consideration the previous history, it seems most probable that the former explanation is the true one. The occurrence strongly suggests the value of the systematic use of the bandage to unmask latent heterophoria, and the case shows how completely heterophoria may remain latent in the presence of the ordinary tests. I have used this method in a few cases in which the symptoms seem to indicate the existence of a latent error where none could be detected by the ordinary tests. The following case is in point:—

E. S. G Age 25 years. Subject to severe sick headaches and asthenopia. At first, greatly relieved by the correction of his hypermetropic astigmatism; symptoms finally, however, returning. Examination showed the refractive correction to be accurate, and the equilibrium to be normal.

All other tests having failed to reveal any error of equilibrium and as there was no doubt of the connection between the symptoms and the use of the eyes I excluded the left eye by ground glass for three days, at the end of which time a left hyperphoria of one degree was disclosed, shown both by the rod test and by Steven's phorometer. A prism of one degree, with its base down for the right eye, produced diplopia, whereas it required a prism of three degrees with its base down before the left eye to produce diplopia. An hour later, both eyes having been used, hyperphoria of one-half degree still showed, and a prism of one-half degree with its base up was incorporated with the right lens. Previous to this time he was practically unable to read. This was in January, 1894. In April, he reported himself very much improved, having had very little headache, some discomfort after reading in the evening, but able to read for two or three hours. He now showed more hyperphoria, and the strength of the prism was increased.

This method of rendering manifest a latent deviating tendency is of course only a more thorough application of the principle underlying all the equilibrium tests, more particularly being a prolongation in time of the old cover test, the most reliable, with its suggestive complement, the parallax test, of all methods at present in use.

(*B.*) In the June, 1887, number of the *Archives of Ophthalmology*, Dr. George T. Stevens protests against the use of the bandage in ophthalmic surgery as being not only "needless but mischievous" and "as the promoter of heat, filth and septicism." He makes no reference, however, to the influence of the use or non-use of the bandage

upon the effect of the tenotomy. I am inclined to attribute great importance to the immediate influence of the binocular functions in establishing a perfect equilibrium after tenotomy while the tendon is more or less completely detached from the eye ball. This function compels the eye to occupy the position in which single vision is possible, and thereby helps to determine the point at which reattachment of the tendon shall take place. If, on the other hand, the eye is bandaged, it assumes its position of rest, there is no tension or straining of the tendinous fibres induced by the desire for binocular single vision, and the reattachment may take place at a point by no means the most favorable for that purpose. The following case illustrates this point:—

Case I. Mr. B. L. D. Aged 25. Medical student, for five years past the subject of headache and asthenopia, in spite of a very accurate correction of a moderately high degree of myopia and astigmatism.

Three or four years ago was operated upon for a very low degree of left hyperphoria ($\frac{1}{4}$°), without relief to his symptoms. In April 1896, there was L. hyperphoria 1 $\frac{1}{2}$°, which increased to 2° after wearing a prism for three days. A prismatic effect= 1 $\frac{1}{2}$° was introduced into his glasses, making him decidedly more comfortable, but a little later he showed an exophoria of 11°; the abduction being 16°, adduction 20°. Systematic exercise soon brought adduction to 48°+, leaving abd: 10°—11° and exophoria 6°–7°—but gave no relief from his symptoms.

He was now showing more hyperphoria, and finally nearly four degrees became manifest.

On November 14th I made a partial division of the left superior rectus tendon, leaving left hyperphoria=1°. *No bandage was applied.*

Nov. 15th L. hyperphoria=$\frac{1}{2}$°

,, 16th R. hyperphoria=$\frac{1}{4}$°

Dec. 3rd No hyperphoria.

Tenotomies of both externi have been performed, and equilibrium tests now show orthophoria.

There has been a great improvement in his condition and he is now able to wear with comfort a full correction of his refractive errors for near work, which hitherto he had been unable to do.

Case II. Miss S. O. Aged 22. First came under observation 5 years ago, when no hyperphoria could be detected. Examination in Aug. '96 showed R. hyperphoria =10°. She was suffering from headaches and asthenopia and unable on that account to continue her college course. Her refraction had been and remained accurately corrected by glasses worn constantly for years past.

On Sep. 14, the Right superior rectus was partially divided, leaving Right hyperphoria=6° barely. No bandage was applied.

Sep. 23. R. hyperphoria=5°.

Partial tenotomy of L. inferior rectus, leaving R. hyperphoria of barely 1°. Left open.

Sep. 28. No hyperphoria

There has been no return of the hyperphoria, and the patient can now read for several hours a day, although there remains a low degree of Esophoria, with subnormal adduction and abduction.

I have reported these cases very briefly, giving only the facts bearing on the subject of the paper.

TOBACCO AMBLYOPIA IN A WOMAN, WITH ANOMALOUS SCOTOMAS.

By G. E. de SCHWEINITZ, M D.
Professor of Ophthalmology in the Jefferson Medical College, Philadelphia.

ILLUSTRATED.

The following case is reported chiefly because of the somewhat unusual shape of the scotoma which was the distinguishing characteristic of the affection, and also because the clinical history indicates that the relation of alcohol to the development of the central amblyopia is practically eliminated as an etiological factor.

A married woman, aged 60, in good circumstances, of large frame and healthy color, presented herself on the 25th of November, 1896, with the following statement: Since June, 1896, vision has been slowly failing, and since July she has been unable to read. This loss of vision had been unaccompanied by pain or any external manifestation of ocular trouble.

Her history, obtained partly by questioning and partly from a letter written by her physican, Dr. J. Cardeen Cooper, is as follows, I quote his exact words: "The patient has always disobeyed the laws of health and has always been subject to excessive tax upon her nervous system: great mental anxiety, loss of sleep, late hours and irregular meals. Four years ago she suffered from enlargement of the liver, disturbed portal circulation and chronic bronchitis. This illness was followed by general neurasthenia and much indigestion. At this period of her history the urine contained, from time to time, traces of albumin and sugar. Under treatment these symptoms entirely subsided and specimens of urine recently examined were normal."

The patient is rheumatic in the vague sense in which this term is used, but has not been subject to inflammatory rheumatism. There is no history of severe illness other than the one detailed in Dr. Cooper's letter.

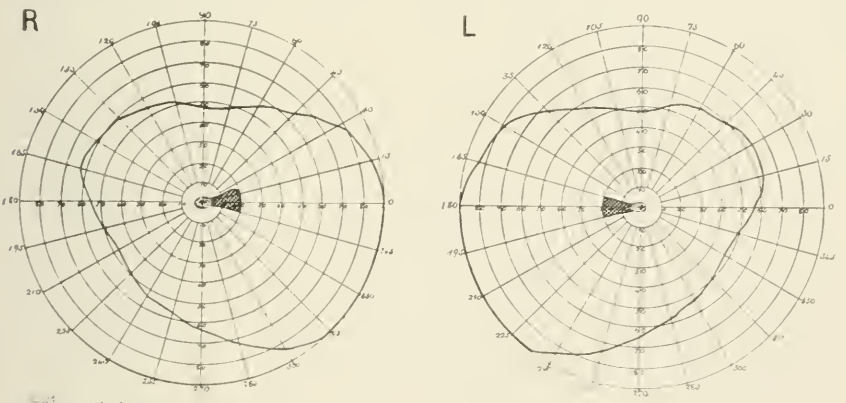
When 45 years of age, or 15 years before she sought advice, the patient began to smoke, at first only a few cigars a day, but for some years she has averaged at least six cigars during the twenty four hours, many of them being smoked late at night and during hours when she should have been asleep. It is probable that the use of the tobacco has been even greater than these words imply, as her daughter freely testified that she doubted if her mother had any idea how many cigars she smoked. The patient began to smoke to relieve, as she supposed it would, high tension of the nervous system brought on by insomnia, worry and domestic difficulties.

She does not use spirits in any form, is not an excessive tea drinker and takes no drug of any kind except digitalis, which has been prescribed in medicinal doses on account of a weak heart.

Vision in O. D. with + 1 D = $\frac{6}{12}$; with + 4 D added, D = 0.75 is read at 22 cm. with difficulty; no range. O. S. V. with + 3 D. = $\frac{6}{20}$; with + 4 D. added no ordinary print could be deciphered. The vision of this left eye has always been defective,—a defective sight associated either with some congenital amblyopia or arising from disuse in connection with high refractive error.

In the right eye the ophthalmoscope revealed faint haze in the lens periphery, a vertically oval disc with broadened scleral ring below and outward, a slight pallor of the outer quadrant of the nerve-head, arteries about normal in size, and veins somewhat distended and tortuous. In the left eye the lens was clear, the disc round, the scleral ring broadened inward, the central lymph sheaths full, the veins tortuous, the arteries normal and the lower and outer quadrant of the papilla slightly paler than its general surface. The macular regions were normal.

The peripheral fields were intact, but in the centre of each field there was a color scotoma for red and green as follows: It begins at five degrees to the temporal side of the fixing point, passes to 20 degrees on the horizontal meridian and to the same distance 15 degrees above and below this position (double cross-hatching in diagrams). In the space between 5 degrees to the temporal side of the fixing point and its nasal edge, the perception of color, red and green, is not lost but is duller than it is as compared with any spot within the area of normal color perception in the general field (dotted area in diagrams). These defects are almost exactly symmetrical, the scotoma being slightly broader on the right side than on the left. The area of the normal blind spot within each scotoma is recognized when examined with a small test-object. The scotomas were mapped with colored circles 1 and 2 mm. in diameter on a dead black surface.



Colors appear faded.
Scotoma red-green blind area.
Test-object 2 m m circle.

Fig. 1. and Fig. 2.

The patient was advised to discontinue tobacco absolutely, and to take strychnine and iodide of potassium. These directions were faithfully followed, and at the end of a month she reported with the vision of the right eye $\frac{6}{9}$ and ability to read 0.50 print. The area of red-green blindness previously described could not be detected even with the test-object only 1 mm. in diameter. The fog in the

center of the field of vision which had so annoyed her had practically disappeared. Ophthalmoscopic appearances seem to be unchanged. In the left eye the vision was as previously reported and the scotoma somewhat different in shape but still demonstrable. It begins outward and above at 5 degrees to the temporal side of the fixing point, passing then to 20 degrees. There is no scotomatous area below the horizontal meridian.

REMARKS.—Tobacco amblyopia is much more frequent in males than in females, not because the former are more predisposed, but because they are more exposed to the influence of tobacco. Indeed, Hill-Griffith is no doubt correct when he says that more cases would be found among women if the investigations of central visual defects were more frequently made, especially if search for color scotomata were more common. He records fourteen cases of toxic amblyopia in women. Berry has noted a number of instances and numerous others have been reported. This is the second case in my own experience in which I feel sure that tobacco was the prime etiological factor.

The typical scotoma in intoxication-amblyopia, according to my own measurements which closely agree with those of Sachs, is an oval with its pointed end towards the blind spot and its blunt end towards the fixing spot, to the nasal side of which it passes only slightly. The average measurements are outward 18 degrees, inward 3 degrees, upward 7 degrees and downward 6 degrees. This scotoma represents a red-green-blind area and commonly the extent of green blindness is greater than that of red, which in its turn may be surrounded by an area of imperfect color-sense. The "culmination spot," or "nuclear spot," in the language of Sachs, of the scotoma, lies horizontally from 1 degree to 8 degrees in a lateral direction from the fixing point, its breadth, vertically, being mostly below the horizontal line. Sometimes a small, easily over-looked scotoma exactly over the fixing spot is the beginning of the trouble. According to Groenouw's observations the typical egg-shaped scotoma results from the union of the scotoma from the fixing spot with a supplemental scotoma around the blind spot. The process may cease at this point or there may be progression characterized by an increase in the size of the color defect, usually above, until it meets the limit of the red field, that is the scotoma "breaks through," and if this goes on, the patient may eventually resemble a congenitally color blind person. In severe cases scotomas for blue and yellow form in similar manner to the red-green scotomas, and occasionally, especially in neglected cases, absolute defects are found within the relative area, and sometimes the entire

scotoma becomes absolute, although probably rarely in perfectly pure tobacco cases. Instead of the typical egg-shaped or oval scotoma the visual defect may pass up and out or down and out, or may be circular, or assume other shapes.[1]

In the present instance the indications are that there has been an anomalous development of the scotoma, either because the process in the macular fibres of the optic nerve has not followed the usual course, or else, which is not improbable, because the scotomatous process began around the natural blind spot and did not reach the fixing point, or, rather, that the union which Groenouw describes of the central scotoma and the supplemental scotoma did not take place owing to the failure of the perfect development of the former of these phenomena.

This type of scotoma is of some clinical importance, inasmuch as our ordinarily received ideas of the pathology of intoxication amblyopia, namely, that it represents a lesion in the papillo-macular tract which consists of an augmentation of nuclei, an hypertrophy of connective tissue and a wasting of nerve fibres, has recently been called in question by Nuel, who contends that the central toxic scotoma is not primarily a neuritis of the macular bundle but a disease of the macula lutea, causing degeneration of its cells, and that the optic nerve changes are secondary to the destruction of the nerve cells of the macula. In this connection it will be remembered that more than twenty years ago Schoen expressed the opinion (I quote from Sachs) "that the scotoma seemed to be the functional expression of the already great physiological weakness of the centre of the retina, heightened by chronic intoxication, to which condition were added certain physiological peculiarities affecting the sense of color, due to the pigmentation of the central retinal spot. In ancient cases, however, owing to continuous strain and abnormal mixture of the blood, certain material changes of the macula lutea might result, which would lead to ascending atrophy, marked by a change of color in the lateral half of the optic nerve."

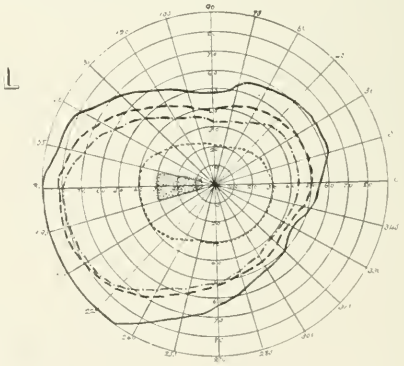
If the scotoma is due to macular changes it would seem, as Sachs has pointed out, that its relation to the vertical line should be symmetrical. This we know it is not. If the case which I report is to be classed as a tobacco amblyopia, and I think that it fairly may be so regarded, macular changes could hardly explain the present scotoma, which, indeed, so far as the red-green-blind area is concerned,

(1) See paper by the writer, Journal American Medical Association, Oct 31, 1896.

is displaced from that portion of the visual field which represents the macula.

There is, however, much to be said in favor of the macular origin of the central scotoma of tobacco amblyopia, both from the clinical and the experimental side. We know that destruction of the area of the macula by a coloboma, or by a patch of central retino-choroiditis, is followed by quadrant atrophy of the optic nerve. We know, too, that in a fair proportion of tobacco cases fine macular changes are demonstrable with the ophthalmoscope. These have been described by Nettleship, by Hill-Griffith, by myself and by other authors, although I confess that it never occurred to me that they had aught to do with the scotoma. Nettleship also regarded them only as coincidences. Experimentally, macular-fibre degeneration can be produced by properly placed retinal lesions, for example, by destroying the area of the retina between the macula and the optic entrance with the galvanocautery and subsequently observing degeneration in the optic nerve fibres. A research of this character has recently been published by Usher and Dean.

Finally, I would call attention to an interesting point in connection with this case, namely, that one eye was congenitally deficient in visual acuity, representing that type which has sometimes been described as a "neglected eye" Now in this class of cases, in addition to the ordinary defective vision as measured with test-types, central scotomas are occasionally found, or at least, areas of central



Scotoma in an amblyopic eye with high refractive error.

Fig. 3.

depreciation of color sense.[1] In a certain number of them the sco-

(1) See paper by the writer in the Annals of Ophthalmology and Otology, Vol IV. No. 3. July, 1895.

toma, instead of being centrally placed, has a situation between 5 and 30 degrees to the temporal side of the fixing spot, as represented in the accompanying diagram,—a scotoma closely resembling the one which I report. Whether in the present instance there was a preexisting area of defective color-sense, which was intensified by tobacco poisoning and therefore retained its original shape, is a matter of pure speculation. It would seem, however, as the defect is symmetrical, and that the right eye, which was the seeing eye, is affected exactly as is the left which was the partially amblyopic eye, that not much information is to be gained from this point of view. Evidently the whole question of the formation of scotomas in toxic amblyopia is unsettled. We are not even sure that a perfectly pure tobacco case exists in the sense that there is no other etiological factor except tobacco. Therefore the record of each new case, with variations in the scotoma, is desirable. Much more to be desired is a continuation of the experimental work connected with this question. On this point I shall have more to say in a subsequent communication.

ADVANCEMENT PREFERABLE TO SIMPLE TENOTOMY.

BY H. Mc I. MORTON, M. S., M. D.
Minneapolis, Minnesota.

It is my belief that of all the cases of strabismus which present themselves to us for treatment, there are few in which an advancement operation is not preferable to the more common procedure of simple tenotomy without advancement. The latter, requiring less skill, less time and being less exacting to both patient and operator is given preference, and the former, even when performed, is unfortunately too often an advancement in name alone. It has been my observation that this operation is done more indifferently, in this country, as well as abroad, than any other ophthalmic operation. This is in all probability due to the fact that from all of the great number of different operations proposed, there has been no general adoption of the very few that are worthy of the honor.

We have come to think of one way to do a cataract extraction or an iridectomy, with possibly slight modifications to suit the taste of the individual operator, but the number of advancement operations proposed and executed is legion.

If we hope to attain to success in the advancement of an ocular tendon, we must never fail to have before us some cardinal principles

to be applied, even though the methods of applying them may differ slightly.

In the first place it is an unwise practice to be mislead by methods of "Capsular advancement" or "Conjunctival advancement". We are to advance *the tendon* if we are to obtain a permanent, as well as immediate result. Then let us not deceive ourselves by thinking we can get good results when we attach our sutures to the conjunctiva or subconjunctival tissue, for we but build on the sand and our house is soon destroyed. We must fix the tendon to the new point by sutures imbedded *in the sclera*. It will then remain anchored where we have placed it. Again, our sutures must not be frail, but of good strong silk or light catgut that will hold firmly, and, lastly, it is better to err in permitting the sutures to remain in too long or altogether than to hastily remove them. In advancing an ocular muscle we get just what effect we desire, and in case of a slight over-correction the eyes will readjust themselves, while in doing simple tenotomy it is well known that an "over effect is much to be feared" and if such an accident happens the eye will not commonly correct the effect of the error of judgment in the operator. It is manifest also that the innervational balance of the muscles is impaired or destroyed in displacing a tendon backwards, and the power of rotation in that direction diminished. By simply testing the rotary power of a muscle that has been tenotomized and comparing it with the corresponding muscle which has not been operated upon, this fact becomes evident. It has been my practice for some time to correct even high degrees of heterotropia by advancement *and without* tenotomy of the antagonist. In cases of high degree it may be found necessary to excise a portion of the tendon we are advancing in order to obtain sufficient result. I have not yet found such a condition of organic contraction of the substance of the opposing muscle which demanded tenotomy of that muscle. Even in case of high degree of convergence of the visual axes the increased tension induced by advancing the externus has not discomfitted the patient, and combined with excision affords the most perfect results. In case of marked strabismus it is preferable to *equally divide* the operation between the externi if we are dealing with a convergent squint.

If we look for cosmetic results alone, advancement affords more permanent results than simple tenotomy and preserves a more equal power of rotation in the corresponding muscle.

From the standpoint of obtaining parallel visual axes in order that we may establish binocular vision, the advancement operation is

the more rational and satisfactory, for by displacing a muscle backward we manifestly diminish the innervational tension and balance of the eyes, whereas in displacement forwards this balance is not destroyed, as the tension being increased the eyes readily readjust themselves. As stated, no better proof is needed than the different effect of the two operations upon the rotating power of the corresponding muscle. In this class of cases I proceed as follows. If the patient be quite young it is almost always necessary to administer a general anæsthetic and I always deem it a wise plan to obtain quite a little overconnection and use Prince's single suture method. We can then without much difficulty decrease the effect if we desire. If, after carefully dissecting out the tendon, we find it to be very small, I take a "tuck" in it as suggested by Valk & Savage. My reason for doing this is that I have obtained better results from this method when dealing with small, in some cases almost threadlike, tendons, than by advancement as usually understood. With these exceptions just noticed, I usually practice a method of advancement which I have adopted from Dr. Buller, and it more nearly fulfills the needs I have mentioned earlier in this article than any operation I have seen. An elliptical piece of redundant conjunctiva is excised over the insertion of the tendon, the tissue dissected aside about half an inch and the insertion exposed. The tendon is grasped by the advancement forceps and cut through at the insertion into the sclera; the stump is excised and the tissues dissected up to the corneal limbus. Both ends of a double needled suture are passed from the inside of the tendon outwards and tied in a knot, thus enclosing the central bundle of fibers of the tendon. An accessory suture is passed from within outwards near the lower edge of the tendon in a vertical line with the central suture and also one in the same line near its upper edge; these are not knotted to enclose the upper or lower bundles of the tendon. The two needles of the central suture are passed sufficiently deep into the sclera *near* the corneal margin to get a very firm hold and then drawn together until sufficient effect is desired and tied The accessory sutures are passed likewise into the sclera above and below the central, not so deeply, and tied. I have found this method quite easy of application and very satisfactory in its results.

AN INTERESTING BUT DISASTROUS TERMINATION OF A CATARACT OPERATION.

BY DAVID H. COOVER, M. D.
Of Denver, Colorado.

As a rule only the successful results of cataract operations are reported; the unsuccessful ones lie hidden in the case books. There are many failures which if published would be interesting and more instructive than the brilliant results of which the operator is so hopeful after he has successfully delivered the lens and cleared the eye of all debris. He naturally places the bandage on with a sense of relief and feels that the result ought to be good. We are not always rewarded even in the most favorable cases.

On April 9, 1895, Mrs. B. aged 77 years consulted me for blindness. On examination found she had double cataract which were matured. On further questioning her found she had had diabetes for several years and was passing about a gallon of urine in the twenty-four hours. Her health was fair and she complained only of her blindness. The urine showed a large quantity of sugar. I searched all the literature at my command in reference to the results of operations upon diabetic cataracts and failed to find any unfavorable comments. As a precautionary measure the patient was placed under treatment for a month, and the quantity of urine was reduced to two quarts in the twenty-four hours. At the end of this period she appeared in good health and spirits and desired to have the operation performed.

I operated upon the right eye, taking every antiseptic precaution, made the modified peripheral linear incision, iridectomy, delivered the lens successfully, cleared the anterior chamber of the soft cortical mass, replaced the edges of the iris, cleansed the wound and conjunctiva, placed the eye pads in position over which a dark knit bandage was tied securely around the head, and then saw that she was placed comfortably in bed. The case progressed very favorably, no pain or discomfort being complained of; on the third day the eye was opened, the wound seemed secure, pupil clear; she saw my face and counted fingers; there was but little congestion. The eye was comfortable,and vision good until the afternoon of the sixth day, when suddenly a very acute and excruciating pain attacked the eye. I was called at once. On opening the eye found it slightly more reddened than in the morning; no more ciliary tenderness than one would expect after an operation; tension normal, anterior chamber clear, but not even light perception. Hypodermic of morphia was administered, and hot applications constantly applied without relief. The next morning pain was the same; to my horror I noticed the cornea hazy and edges of the incision were ragged, as disintegration had begun. The whole cornea became infiltrated and sloughed and the eye lost, pain was constant except when under a narcotic. On the morning of the fourth day after the eye became involved, she suddenly exclaimed to the nurse, "The pain has gone from my eye and now it is in my left wrist," it was just as severe as it had been in the eye. A few hours afterwards the finger nails became dark, skin over hand and fingers of a dusky hue and were cold. She was pulseless at the wrist, arm

cold above the elbow. Three days afterwards she went into a diabetic coma from which she never rallied; at the end of another week she died. At first there was some doubt in my mind as to the cause of the loss of vision and of the sudden onset of acute pain, but when the thrombus formed in the brachial artery of the left arm it became evident that the same had occurred in the central retinal artery of right eye.

I report this case for the following reasons:—

FIRST, because it is instructive and interesting.

SECOND, that one cannot be too sanguine as to favorable results in operations upon diabetic cataracts, and

THIRD, that reducing the quantity of sugar does not lessen the risk in these cases, for I believe had I operated at once the eye would have recovered and had useful vision for at least a month before the crisis came and the operation would not have been assigned as the cause of death nor the operator censured by the friends.

TREATMENT OF STRABISMUS IN CHILDHOOD.

By C. M. HOBBY, M.D.
Iowa City, Ia.

There have been great differences of opinion amongst surgeons of repute, as to the propriety of early operation in cases of squint. Many believed that it was of advantage to operate early, even in infancy, while a few always deprecated early operations. In recent years the preponderance of opinion has been against operation until the age of six, and a considerable number postpone operation until after puberty. The consideration which has led to the opinion that operations in children should be deferred in cases which are able to remain for a long time under the surgeon's care and observation, are the results of prolonged experience with methods, which have been so entirely satisfactory, as to secure confidence in their application.

The objections to early operation should be carefully considered in each case, and if insurmountable they should prevail against the natural desire for immediate results. The parental anxiety to have the deformity removed as soon as possible, on the other hand, should be gratified if it can be done without jeopardizing the more important aim of the conscientious surgeon, which is to secure binocular vision, or common functional activity of both organs of vision.

The subject of amblyopia in squint has not yet received all the consideration it is entitled to: and it is not yet definitely settled

whether amblyopia of the squinting eye precedes the squint, or whether it is always the result of non-use of the squinting eye, or whether the truth may not lie between the two propositions.

It has been observed that squint sometimes becomes spontaneously cured at puberty, and this is certainly true as to the deformity, but in such cases, monocular vision prevails as a rule, and the squinting eye remains amblyopic. It has also been stated that cases of squint operated on in early childhood, are prone to develop divergence after puberty; and this is probably true in all cases in which binocular vision has not been obtained.

In the light of present knowledge, there can be no hesitation in accepting the doctrine that amblyopia results from non-use; and while it is not improbable that amblyopia sometimes precedes squint, and may even indirectly cause it, yet the vision of a squinting eye progressively deteriorates, unless the eye be employed in some visual effort.

The advantage of early operation in preventing amblyopia is more apparent than real; for unless the surgeon makes sure after the operation that the habit of monocular vision is overcome, the relief of the appearance of deformity takes from the parents the incentive to the constant efforts which alone can bring about binocular vision.

In those cases of alternating squint in which the vision is normal, or nearly so, in both eyes, early operation might of itself lead to binocular vision; but the difficulty in determining the acuteness of vision before six years of age makes it practically impossible to select these cases earlier; and in the writer's experience cases of alternating squint with equal or nearly equal vision of both eyes, are the most persistently monocular in their vision.

Donders' association of hyperopia in a causative relation to convergent squint is not accepted universally; and it seems probable that the theoretical adaptation of convex lenses to the squinting eyes of young children has often accentuated the monocular vision, and fostered the amblyopia.

Careful observation of cases extending over more than twenty years has led to the belief that the best results in converging strabismus of the young are to be obtained by subordinating the idea of "straightening cross eyes" to the systematic effort to secure binocular vision. The accomplishment of this object of treatment always carries with it the desired improvement in appearance, while the mere relief of the deformity may not be accompanied by increased usefulness of vision. For this functional result, it is better to postpone operation until it is

certain that success is impossible without tenotomy and consequent weakening of muscles. Excepting those cases in which the squinting eye is too amblyopic to fix any object, and in children under ten years of age binocular vision can be secured by persistent training, in nearly every case. The method employed is by no means new: it was employed with some success before ocular surgeons were familiar with errors of refraction, and long before the ophthalmoscope made a mystery of amblyopia. The opportunity we now have to remove some of the causes of monocular vision, enables us to employ these simple measures with much greater efficiency. When squint is discovered in infancy, the cause may sometimes be found by careful observation; and it may usually be determined whether the preference for monocular vision applies to all distances, or only to near objects: and whether the child always prefers to use one eye, or sometimes uses one and sometimes the other. If no cause for deficient vision be found with the ophthalmoscope, the child should at once be compelled to use both eyes, one at a time: and this applies to all ages up to ten or twelve, although the earlier the training begins the better. As the child extends its horizon the work put upon the defective eye should be increased, and the practice should be divided between near and distant use. The ordinary direction given, is, to bandage the better eye an hour in the forenoon and an hour in the afternoon, and give half the time to playthings and pictures and half to walking, rolling a ball etc. and when the vision is very defective, to finding the way around the room or yard, and to search for concealed objects. When the child has learned the letters and is fairly tractable, the acuteness of vision should be measured carefully and recorded for purposes of comparison. The refraction should now be corrected, giving especial care to any astigmatism. (In case of doubt the writer prefers to trust the ophthalmometer for axis and quantity, without deduction, and to wholly correct the hyperopia if any be present.) Frames should be carefully looked after, and should be made for use and ease and not for appearance. The compulsory use of the defective eye should be continued, and muscle training begun. The method of bringing the different muscles into action should be taught to some one who will be persistent in daily training the child, and the work should be continued from day to day without intermission.

The muscle training should be applied to both eyes, although the defective eye should usually receive the most attention. It should consist in causing the eye to which attention is given, the other being

covered, to make excursions in various directions, to the maximum possible, with the eye accommodated for different distances. Exactness of movement, and rapidity of action should be insisted upon.

For binocular vision it is essential that the following functions should be combined;—

Prompt mental interpretation of the retinal image in either eye.

Prompt and accurate direction of either eye.

Co-ordination of the movements of both eyes, so that they may be directed towards a common point.

More or less simultaneous mental assimilation of the retinal images of the two eyes.

It is easier to train the co-ordination when the muscles of each separately are under the control of the will, than when one is well practiced and the other neglected.

It is easier to secure co-ordination when the mind can appreciate each retinal image separately with some degree of promptness, than when one is quickly seen and appreciated and the other is unfamiliar.

It is easier to co-ordinate two sets of muscles, when both are well practised, than when one is practiced and the other is not.

The practice essential to co-ordination is more effective in early life than after maturity.

The method described will secure better vision and better muscular control, when employed in childhood, than can be obtained after operation without such practice; and in the small percentage of refractory cases, a late operation accomplishes better visual results than can be secured without such early training.

NOTE.

A very good description of the method of treatment of Strabismus in use before tenotomy had been recognized by the profession as a proper resource, may be found in *Middlemore's Treatise of Diseases of the Eye*, London, 1835. Vol II. p. 563. The operation of strabismus, as rescued from traveling charlatans, came in vogue soon afterwards; the first operation reported in America being made in August 1840. Had tenotomy failed to come into use before the ophthalmoscope and accurate means of recognizing errors of refraction were known, it seems reasonable to suppose that the older methods of treatment would have been perfected, and the efforts of the surgeon would have been directed towards restoration of function rather than relief of deformity.

PENETRATING WOUNDS OF THE LENS. REPORT OF FOUR CASES.

BY H. BERT ELLIS, M. D.,
Of Los Angeles, California.

Case I. Master R. G., ten years old, came to my office on March 2nd, 1896, with an injured eye, and gave the following brief history. About five hours previously, while out flying his kite with other boys of about the same age, he had occasion to adjust the strings and tail of his kite. While tying a knot the kite slipped and the sharp end of the back bone ran into his right eye. The boy was frightened but as the injury did not cause him much pain he did not report the accident to his teacher for some half hour or more; and it was not till the boy began to complain, some two or three hours later, that he could not see very well with the injured eye, that a physician was sought, who referred the boy to me.

I found a corneal wound of the right eye $\frac{1}{3}$ in. long running obliquely, downwards and inwards about $\frac{1}{4}$ inch at its center, from the external sclero-corneal margin. The iris was caught in the opening, and the nasal or superior lip of the wound of the cornea bulged considerably; the pupil was small, irregular and non-responsive. The lens capsule had been punctured and the lens fibers were beginning to swell and the red reflex was only to be had on the nasal side of the pupil.

The lad had suffered no pain from the time of the accident, either in the eye or adjacent parts. I ordered a solution of sulphate of atropin, 4 grains to the ounce; a couple of drops every three hours.

In 24 hours the pupil was irregularly dilated, the iris partially pulled out of the corneal wound, and the lips of the wound were quite accurately adjusted, but the lens substance was so opaque that no reflex could be obtained and so swollen that it exuded through the capsular wound into the aqueous humor as a gray fluffy mass.

On account of the rapid swelling of the lens and increased tension I decided to open the anterior chamber and extract as much of the lens as possible; this was done on the sixth day after the accident. At the same time I detached the iris from the corneal wound. The boy made an uneventful recovery excepting a slight reattachment of the iris to the cornea.

Six weeks after the operation I fitted glasses to the little fellow and gave him vision of $\frac{6}{9}$ in the injured eye, by the use of a compound lens $+$ 12 Sp $\bigcirc$ $+$ 2.50 Cy. ax. 135°.

During the vacation while romping with older brothers, he had the misfortune to receive a severe blow on the same eye, which produced an iritis. As he was in an adjoining territory at a mining town, at the time of the second injury, he was not seen by me till quite recently, at which time I found the pupil occluded by a thin membrane which interfered with vision. An operation for the removal of this membrane will be performed during the Christmas vacation.

Case II. Mr. E. W. aged 25, blacksmith, consulted me April 20th, 1896, on account of an injury to his right eye. A week before while fooling with a percussion cap, it exploded, cut the cornea on the temporal side at the sclero-corneal margin, tore a hole through the iris at its attachment and punctured the capsule of the lens close to its external edge. The wound had caused some pain for which a druggist had given him a solution of cocain to use in his eye.

At our first meeting, I found the pupil evenly dilated excepting that portion close to the injury of the iris which was flattened. There was no inflammatory condition of the eye, the media were clear, the use of the ophthalmoscope revealed no portion of the cap within the eye, although I could find no counter-opening in the cornea and vision was but $\frac{6}{60}$ and could only be brought up to $\frac{6}{40}$. However the unwounded eye had vision of only $\frac{3}{60}$ and could not be developed to better than $\frac{6}{60}$. There were some cortical opacities running from the lens wound towards the center but not invading the pupillary space to any great extent. Tension was normal. I saw the patient again on the 1st of June, the cataract had not increased any and vision had improved to $\frac{6}{40}$ without a lens, but could not be increased beyond that with any combination of lenses.

This case was peculiar from the fact that the cause of the injury was known, a piece of a copper cap had cut through the cornea, had torn a hole in the iris, and had gone with sufficient force against the lens to start a cataract, yet no sign of this piece of copper could be found in the eye, nor was there any symptom present indicating its presence, and no track of exit was visible with the most careful search. I was convinced at the time that a small piece of copper must be hidden within the eye, but deemed it my duty not to search for it with other instrument than my eye as long as no inflammatory symptoms existed.

Case III. Miss A. V. P. aged three years, came to me September 8th, 1896. Her father, who accompanied her, said that three weeks previously her right eye had been scratched by the sharp end of a freshly cut pepper branch, and according to his statement the eye (i. e. the cornea) had been blistered by the sap, which had left a white spot. For a week the lids had been much swollen and especially so at night.

The little girl herself said that she had cut her eye with the knife when attempting to cut the pepper branch from the tree.

An examination of the eye, showed that the child's claim was probably correct. I found the line of the corneal cut running from above downwards and outwards nearly the whole length of the cornea just at the outer edge of the pupil with an anterior synechia at that point. The instillation of a few drops of a 1 per cent solution of the sulphate of atropin, dilated the pupil in half an hour. It was not quite circular. The lens showed opacity shading off from point of wound, with but little reflex, even at the periphery. Quite an acute conjunctivitis and blepharitis existed which I treated by ordinary methods and which quickly yielded.

On September 16th, 1896, I made a second careful examination and found the cataract so well developed that I could get no reflex and the child could only detect forms. October 3rd, 1896, I again saw the child but found no particular change in the condition of the eye. The corneal scar was very white.

Case IV. E. G. S. aged 26, laborer, consulted me October 30th about his left eye, which was very much inflamed, and was giving him no small amount of pain. On the 29th while blasting rock he was struck in the eye by a flying stone, hurled by a premature explosion. The pain at the time of the accident was

considerable, but it had been increasing up to the time of the consultation. I found a ragged Y shaped wound of the cornea, with the adjacent corneal tissue somewhat opaque. The pupil small, and iris muddy, lens opaque with part of its substance as a fluffy mass in the anterior chamber. The peri-corneal injection was very marked.

I advised immediate enucleation but the patient begged that something else be tried first and that removal be the last resort. I accordingly put the eye under the influence of atropin and on the following day removed as much of the lens as possible. The operation was of no further benefit than the giving relief from pain for a few days. Inflammation soon became more marked and enucleation had to be resorted to November 29th.

These cases represent a few of the many phases of lens accidents. No hard and fast rules can be laid down for the treatment of these injuries. Each case must be watched and treated according to its individual needs.

CLINICAL NOTES.

By Wm. E. BAXTER, M.D.
Ophthalmic Surgeon to the Boston Dispensary.

Foreign Body in the Canaliculus.—Reading Dr. Taylor's case of foreign body in the canaliculus reminds me of a case of a similar nature seen in the service of Mr. Lang at Moorefields; a patient presented himself complaining of intense conjunctival irritation. On inspection the conjunctiva near the inner canthus was found to be much abraded, and closer inspection showed a stiff bristly hair protruding from the upper canaliculus. This was removed by means of forceps; the patient stated that several days before, while having his beard trimmed a piece of hair fell into his eye, and that the trouble came on at once. In this case also the hair must have been thrown directly into the punctum.

Prescribing Atropia in Old People.—Concerning Dr. Brown's case of glaucoma following the use of atropin, I cannot think why one should ever wish to use atropin for refractive purposes in a patient of sixty years of age, as the accommodation is sufficiently relaxed at least one or two decades before that age to render such practice unnecessary. The possibility of glaucoma following the use of atropin in patients over fifty years of age is sufficiently great to make one hesitate as to using atropin for therapeutic purposes in these patients, to say nothing as to using it to paralyze an accommodation already relaxed by age.

CORRESPONDENCE.

PASADENA, CALIFORNIA, January 31, '97.

TO THE EDITORS OF THE OPHTHALMIC RECORD.

Dear Sirs;

A few days ago I received the January number of the Ophthalmic Record in which Dr. Gould publishes a cut of an instrument which he calls a "Sulcus Syringe." In the N. Y. Med. Journal in Sept. or Oct. 1885, I published a cut of the identical instrument, which I had devised for the same purpose as that for which Dr. Gould's instrument is intended. Dr. Gould no doubt has had the same idea as many others have had, but you will pardon me for calling your attention to the circumstance. Sincerely yours,

JOSEPH A. ANDREWS.

REVIEWS.

Study of an epidemic of Acute Purulent Ophthalmia and of its Cause--the Bacillus Septatus. By Dr. Th. Gelpke. (*Graefe's Archiv für Ophthalmologie*, xlii, 1896, page 97.) Recently Dr. Gelpke had the opportunity to observe and study bacteriologically an epidemic of acute conjunctivitis which affected a large proportion of the inhabitants of two small villages in the vicinity of Carlsruhe. The onset was rapid, it spread quickly from house to house, and frequently entire families were affected. In all were noticed the same symptoms; headache, malaise, fever, loss of appetite, redness and swelling of the lids, so that after ten hours they could be no longer opened spontaneously. Upon separating them there immediately welled up a copious secretion, at first thin and later muco-purulent. There were great photophobia and pain. Upon everting the lids, the fold of transmission protruded, being enormously swollen and of a peculiarly dark red color, containing many small extravasations and covered with a fibrinous membrane. Later the surface became rough from an enlargement of the papillae and ultimately became wrinkled from an active follicular process. As the eye-ball became involved, a punctate parenchymatous infiltration of the margin of the cornea was noticed, together with irritation of the iris and miosis. Hence the condition is diagnosticated as *conjunctivitis contagiosa epidemica* (Arlt) s. Schwellungskatarrh. The hygeinic conditions were very bad, the summer was hot and dry and the dust lay on the more frequented roads ankle deep, while the water supply was wholly inadequate. Tuberculosis and scrofula were prevalent in both places, and individuals who had been treated for these constitutional conditions were rather more apt to be affected. The duration of the average case was from eight to fourteen days, while the severer, with perhaps corneal complications, demanded at least a month of active treatment. After regulating as far as possible the daily routine, a 1–5000 solution of sublimate was frequently and thoroughly used as a lotion, then when the acute symptoms had somewhat subsided, a 1–500 solution was vigorously rubbed into the conjunctiva of the everted lid, with especially gratifying results in those cases which were characterized by the papillomatous proliferation; this caused pain even with cocain. Corneal and iris complications were met as they occurred. The results were excellent. The bacteriological investigation was carried

on in conjunction with Prof. Migula, the material being derived from children under the care of the author and who had become infected by a child who had recently passed through the epidemic.

To obtain a knowledge of the micro-organisms commonly met with in the healthy conjunctival sac, a series of experiments were first of all instituted upon:

1st, the ordinary run of office patients who come for other than eye troubles, thirty in number;

2nd, a similiar number of college students and intimate friends;

3rd, a similiar number of ladies and maidens of the higher classes;

Careful examination gave differences in appearance, but none had conjunctivitis. The inoculations were made upon bouillon-peptone, and agar with glycerine 1% and kept three days at a temperature of 37° C. In the first series 63% were sterile; and in the second 83%, and in the third 100%. This suggests the possibility that all strictly normal conjunctivae are sterile; the variations of different authors being probably due to contaminations from the edges of the lids. Then the behaviour of the secretion of the little patients upon the different culture media, consisting of blood serum and peptone-agar at first, and later peptone-agar with glycerine 1%, is described in detail.

Pure cultures of the same bacillus as that present in the secretion from the children were also obtained from the secretion of twenty-six individuals who had later in the epidemic suffered with this acute conjunctival inflammation, and the constant appearance of this bacillus naturally justified the opinion that it must have a specific connection with this conjunctival inflammation and suggested more extended biologic and morphologic study.

This organism, when examined in the "hanging drop" at an early stage, appears as a short rod, slightly pointed at the ends, non-motile, length 1 *m*, breadth 1/3 - 1/4 of the length. At first glance its very remarkable characteristic meets the observer, which is a clear zone, by which the impression is awakened that he is examining two short rods with the ends in contact with one another. On more careful examination he sees before him one cell-body through whose centre transversely a bright space passes, which becomes still more evident if the bacilli are looked at after staining, which is easily accomplished by the usual analin colors or by the method of Gram, and when they are well stained it will be seen that the contour is in no place interrupted nor is a constriction noticed in the region of the zone. In

pure cultures, one day old, are bacilli with the characteristic bright zone, the plasma-space; great variations in the dimensions of the bacillus are apparent. Preparations made from cultures resulting from direct inoculation with the conjunctival secretion, they being relatively recent, display bacilli which are short and slender, while those bacilli derived from repeated re-inoculation at the same stage are coarser. These differences are probably due to the fact that the older cultures had become accustomed to the artificial conditions and therefore grew more luxuriantly. Different culture media affect the appearance of the bacilli, they being slender and long when grown upon blood serum and short and thick when upon glycerine-agar, and still more startling are the differences according as certain conditions (moisture, alkalescence, etc.) vary. If the bacillus, for example, has been planted upon glycerine-agar which was more or less dry and rather old the growth is less luxuriant than in a fresher agar-tube or one to which there has been more glycerine added. The involution-forms begin at a time when the culture medium is with the point of being exhausted, and this is, relatively early, the case in the conjunctival secretion and unsuitable media. If preparations are made directly from acute conjunctival inflammations, degenerated bacilli are almost exclusively present. If bacilli of the same age (two days), grown upon moist and dry agar, are compared, the bacilli derived from the moist resemble the youthful forms while the others appear as one of the involution forms; the length has now doubled, the ends have become blunt, so they appear more parallelogramatic, and instead of there being one space, there are several. The author is not able to satisfy himself whether the lack of moisture is a determining cause as regards the differences in their appearance. Clinically it was noticed that the spread of the epidemic was most rapid at the time when the heat and dryness were the greatest. Doubtless dryness plays an important role with this as with other organisms and no doubt other factors (toxins) exert a detrimental influence. On the fourth day the bacilli from the agar cultures had taken on a slight nodular swelling of the ends by which they assumed a dumb-bell form. Blood serum cultures of the same age are slender, poorly developed, and do not have the nodular ends. The single or multiple plasma-space is not wanting. During its further development, the bacillus increases in length and number of segments, and takes on changes in form quite rapidly. While dry media bring the growth to a climax in five or six days, more favorable conditions prolong it

ten or twelve days. As regards the final stages of the involution, some of the bacilli retain the form of the parallelogram, with others the dumb-bell prevails while enormous swelling of the ends is seen giving the bacillus the form of a club. Other differences are noted which are not due to age or different nutrient media. In their final stage sometimes a swelling and splitting of individual segments occur, in which a space parallel to the long axis appears by which the suspicion of a new, short, bacillus-formation is aroused. Just as singular is the falling apart of the entire bacillus into angular or round plates which collect in the water of condensation. As a residuum of the bacillus there remains an empty tube. There has been noticed in the early degenerative stages around the bacillus a colorless zone, which to Friedlander's Capsule stain took on a pale blue tint, yet this must not be considered as final because most bacilli have on their surface something which by certain staining methods and treatment can be made visible.

This bacillus is aerobic and thrives upon agar-agar, glycerine-agar, blood serum, grape sugar-agar and neutral bouillon. Temperature limits are 30°–42° but most favorable 35°–37°. It does not grow on gelatine or potato, and needs slight alkalinity and moisture. Agar with 1% glycerine is preferred by the Author. Glycerine-agar 6% gives a scanty, non-characteristic diffuse growth. Stabs in grape sugar-agar give minute colonies along the stab without fermentation. Pure colonies on sterilized milk coagulate the casein with alkaline reaction. On neutral bouillon in 24 hours small yellow floculent masses form a sediment, the bouillon remaining clear if there is no contamination. On 1% glycerine-agar in from 12 to 24 hours appear minute, distinct, grayish white, well defined clusters which double in size during the next 24 hours, and remaining within the inoculation limits. Reinoculation on moist agar or 5% glycerine-agar after 12 hours produces many minute, punctate, always sharply limited colonies. These colonies grow as well upon dry as upon moist culture media only not so luxuriantly. A yellow floculent sediment made up of dead bacteria and involution-forms is noticed in the water of condensation after the third day. During the systematic reinoculation every fourth or fifth day the bacilli were observed to increase in length and in number of segments through spaces appearing in the plasma, and in old cultures the degenerated bacilli seemed to be disintegrated into forms resembling cocci, but by carrying this form over to a fresh tube he could positively identify young forms which had sprung from the same.

These facts would have been convincing enough to prove the propagation by segmentation if careful investigations had not demonstrated in the bacillus simultaneous alterations which suggested the possibility of another method of propagation, spore formation. The localized enlargement and the active staining qualities of single segments of the transformed bacilli suggest this possibility. To decide whether there was actual endogenous spore formation, three methods of investigation were undertaken:—

1st, by the hanging drop.

2d, by staining methods applicable to spores (Neisser and Ernst).

3d, observing the vitality of the bacilli.

The first is exceedingly convenient in recognizing a possible spore, for the highly refractive properties of the spore would never be mistaken for the alternating light and dark areas representing the segments and spaces of the bacillus. At first the staining methods seem to favor spore formation.

In the bacilli stained according to the methods of Neisser or Ernst there can be detected in the lightly stained bacillus certain segments which accept the color in an especial manner There appear isolated granules colored distinctly red lying sometimes in the middle sometimes at the end of the bacillus, which is usually smaller than an individual segment and not perfectly round. Their small size differentiates them from the enlarged extremity of the bacillus. Although these granules will be considered as spores of Neisser and Ernst, in the opinion of the author, as a result of his investigations and staining methods, these forms should be considered not as spores, but as the so called chromatin granules, an albuminoid substance very susceptible to carbol-fuchsin and about which so little is definitely known. In order to determine the longevity of the bacillus and its vitality during propagation, a month long systematic carrying over of an original culture upon agar, at first daily, and afterwards every second day, was instituted. Each tube remained in the incubator, three days at 37°, was examined and put back for two days more. Only on the fifth day was the first indication of any growth perceived. Both the original culture and the later generations were always under similar conditions of temperature and were prevented from evaporating by means of rubber caps. A second series of experiments was then undertaken in which the parent culture remained in the temperature of the room, (which had a wide variation, it being winter), without the rubber cap. Grafts were then made and placed in the oven for five

days. From the tabulation which follows it appears that the material can be successfully used for twenty days provided the parent culture remains always under favorable conditions of moisture and temperature, but its term of life and capacity for reproduction rapidly diminish according as conditions of dryness or low temperature obtain. These facts speak with certainty against spore formation, because if this bacillus was able to go into a resting condition by spore formation, reproduction would not cease in so short a time even under relatively unfavorable conditions, for the resistance of the spore to adverse conditions is too well known. Thus it is seen that the reproduction is by segmentation, which begins during the first day by an increase in length and a separation of the cell body resulting in the formation of spaces and individual segments. As the culture media become exhausted the spaces and segments continue to form, till finally the vitality of the bacillus becomes extinct, disintegration follows by which the segments become free and ready to form a new organism when fresh nourishment is offered. To admit the formation of the young bacillus *in loco* would contradict all former bacteriologic experience. The space formation in individual end segments parallel to the long axis of the parent form is to be considered merely as an involution form.

The pathogeny of this bacillus was studied by means of inoculation experiments upon men and animals in which pure cultures were applied directly to the conjunctiva and injected into the parenchyma of the cornea. Before each inoculation the absolute pureness of the culture, and the germs already existing in the conjunctival sac were of course determined. Three bouillon cultures of different ages (one, three and six days respectively) were placed in the sacs of three rabbits each, and the nine animals were isolated. In two of the animals, on the third and fourth days, a slight hyperæmia and a discharge containing only cocci were noticed. That there might be no source of error through dilution from the tears, in a second set of experiments the material, ½ cc. in amount, was injected directly into the conjunctival tissue with a negative result. Into pockets made by a sterilized knife pure agar cultures were inserted and as a "control" a similar pocket was allowed to heal without contamination. While the latter healed by first intention the three former corneæ presented on the following day a grayish white opacity which went on to infiltration together with iritic irritation on the day after. Healing was complete in eight days without further increase in the process, the

conjunctivitis, being simple and non-typical and passing away quickly. This bacillus has therefore limited pyogenic properties. One cc. of a pure culture, diluted with distilled water, injected into the cornea caused no reaction. Therefore the inoculation of rabbits must be considered as absolutely without success in producing an acute inflammation similar in character to the one now under discussion. Resulting from inoculations made upon seven individuals it was found that this segmented bacillus had an influence upon the human conjunctiva. Four of these had an acute conjunctivitis resembling that characteristic of the epidemic but milder and of shorter duration, there being redness and swelling of the lids, especially of the fold of transmission, muco-purulent discharge, photophobia, pain and the typical bacilli. The other three subjects probably possessed strictly normal conjunctivæ which accounts for the immunity, while the lids and conjunctivæ of the other four had undergone inflammatory changes of varying intensity. A strictly normal mucous membrane is not only a poor breeding place for microorganisms but according to recent investigations actually possesses some bacteriocidal properties. There must also exist a predisposition in certain individuals, for, as is well known, tubercle bacilli can remain in contact with the mucous membranes of certain individuals without exciting either local or general reaction. A relative immunity may in part explain the different degrees in intensity in the inflammatory reaction in different individuals.

In order to determine whether this bacillus was ever present in the secretion of other acute and chronic conjunctival inflammations, at a time when an acute conjunctival catarrh prevailed, Dr. Gelpke examined bacteriologically fifty individuals, as they appeared with regard to the microorganisms contained in their conjunctival sacs. Such bacilli as were found were examined with great care to determine whether his bacillus was present or not. The appended table shows the segmented bacillus to have been present in eighteen individuals, fifteen of whom had "Schwellungskatarrh;" two, acute follicular catarrh and one, acute conjunctival catarrh. Therefore this bacillus is not often found as an intruder but is always found in that form of the disease which characterized the epidemic. Thirteen individuals or 26% were found to have acute follicular catarrh: of these six had symptoms pointing towards a simultaneous "Schwellungskatarrh" and among the remaining seven, who really had only slight inflammatory symptoms, the segmented bacillus was found only twice, consequently

the first six should not be considered as typical follicular disease but really the epidemic variety. The follicle is in this connection to be regarded as a secondary symptom, resulting from irritation. Follicular disease is the result of another organism probably a coccus not yet identified.

Although the bacteriologic work regarding the fungi appearing in infectious diseases during the last decade is extensive, relatively few are those who have attempted to discover the specific cause for individual eye diseases. With the exception of the accurate and exhaustive contributions of Bumm, Michel and others concerning certain organisms causing certain diseases, for example, the gonococcus and trachoma coccus, very little is definitely known about the cause of other acute conjunctival diseases. Weeks in 1887 described a small bacillus present in the secretion of an acute catarrh, which was always contaminated with a "club-shaped" form. Pure cultures of the latter caused no reaction. Weeks probably had to do with two forms of the same bacillus instead of different bacilli as this would in the Author's opinion easily explain the difficulty of obtaining pure cultures of the smaller, since the larger is probably only an involution form of the smaller, and as no mention is made of spaces in the cell body, it must be regarded in no way identical with the segmented bacillus. Koch and Gaffke found in a highly contagious conjunctivitis some small rods resembling those of mouse septicæmia, and Kartules succeeded in growing the same on agar as fine, grayish points becoming confluent, making a stripe having a fatty appearance, which he considered as identical with the Leber-Kuschbert Xerosis bacillus, but this Gelpke doubts after examinations of Leber's preparations. Schmidt found a form resembling the albus morphologically and Parinaud one resembling the gonococcus which Morax identifies as the streptococcus. The organisms found in the fibrinous or croupous inflammations do not resemble the segmented form. The Xerosis microorganism, however, somewhat resembles it although an examination of a tabulation of the literature shows many differences in form, growth, etc. It is found in acute and chronic conjunctival conditions uncomplicated with xerotic changes. Variations in length and breadth of 0.8–2 *m* and 0.2–0.6 *m* respectively have been found. As regards its shape, observers have considered it to be a short bacillus with straight sides and rounded ends, or a double rod, or, partly straight or partly curved rods made up of light and dark plates; or, as short pointed rods without segments, later becoming fan-shaped. To some it is motile; to

others, non-motile. According to some, reproduction takes place by segmentation; to others, by gonidia formation and to others by spore formation. The most favorable temperature is 37–39° C, although others have succeeded at 35°. It grows better on serum first and on agar later. The colonies on gelatine become confluent; on agar as a thin deposit without characteristic appearances; on serum as white pin-head colonies becoming confluent; and as a dry shining, 2–3 mm. broad stripe, or as small, sharply defined non-serrated colonies which form rosettes and never become confluent. Only two have succeeded with potato. Bouillon becomes opaque. Kuschbert and Neisser obtained a moderate inflammatory reaction while Leber describes a catarrhal condition of the conjunctiva which might be somewhat due to staphylococci present. In short the descriptions of the xerosis bacillus are, in its morphologic and biologic relations, so conflicting that it is not possible to believe in its existence *sui generis*, but that various bacilli more or less related have been considered. The segmented bacillus agrees with some of the xerosis complex in being non-motile, growing in the oven, and not at the room temperature on gelatine; does thrive on potato; probably both grow in bouillon in a similar manner, although it remains clear in one case and not in the other. Primary cultures do not succeed well on agar. In form there are many resemblances between the segmented bacillus and the bacillus of xerosis. The discrepancies in description are probably due to the fact that some of the involution forms have been mistaken for the original bacillus, and it is to these transition forms that the segmented variety bears some resemblance.

In the appearance of the primary bacillus is to be found the striking characteristic which differentiates the segmented variety from all others and gives it a separate position, that is still further reinforced by its particular behaviour when placed upon the human conjunctiva which the xerosis bacillus does not possess or only in a slight degree. The question whether the segmented bacillus, in spite of apparent similarities, must be considered a heterogenous organism, or, whether a virulent form of the generally non-virulent xerosis bacillus is being considered, must remain undecided. It is certain that reproduction is by segmentation in the one case while recently Ernst and Neisser have claimed spore formation as being the manner of reproduction in the so called xerosis bacillus.

At all events there seems to be no reason for including the segmented form under the "collective name" xerosis bacillus and it seems

as if it should be designated with reference to its most marked characteristic, so apparent in its earliest stage of existence as the Bacillus Septatus or in case this name should be adopted for the so called xerosis bacillus it could receive the more exact and comprehensive title of Bacillus Septatus conjunctivitidis epidemica. A valuable bibliography, comprising bacteriological publications between 1883 and 1895, concludes Dr. Gelpke's monograph.

WM. DUDLEY HALL.

REPORTS OF SOCIETIES.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

The regular meeting held February 9th, 1897.

Dr. W. T. Montgomery, President, in the chair.

A case of *Keloid of the Cornea* was described by Cassius D. Wescott, M. D. In February, 1895, a baby two years old was seen with a disfiguring prominence on the cornea of the left eye. Parents, who were Scandinavians, gave the following history: Three or four days after birth the left eye became swollen and red and discharged yellow matter. No ophthalomologist was consulted until the cornea had become opaque. The mother says there was no change in appearance of eyeball for six months and then the front of it began to grow and continued to do so for six months and then ceased. Eye never seemed painful. The lids were never closed over the projecting eyeball

From all appearances it seemed to be a case of total staphyloma with thickening and epidermization of the cornea and an abscision was advised, but on examination under an anæsthetic it was discovered to be a solid tumor. On examination of the specimen, after abscision and evisceration, the cornea was found to have been perforated and the iris adherent throughout its entire extent and that the cornea was uniformly thickened, measuring in the center nearly 8 mm. in thickness. The external surface was rough and the color that of the integument. The wound healed kindly and several months after the operation the cicatrix was normal and the stump freely movable in the orbit. The specimen was placed in Fleming's solution and the hardened cornea examined by Dr. Hektoen, Professor of Morbid Anatomy and director of the laboratories at Rush Medical College, who made the following report. The sections (30 to 40 microns in thickness) were stained with hæmatoxylin and eosin according to Van Gieson's method. Microscopically, the anterior epithelial covering is found somewhat but uniformly thicker than normal and the cells composing it are more flattened than usual while those upon the surface have formed a relatively thick, horny layer, so that the cornea is provided with a distinct "stratum corneum." In some places the lower layer of cells is of a brownish color, but otherwise the anterior epithelial layer of the cornea is free from pigment, but the conjunctival epithelial covering present is the seat of a light brownish diffuse pigmentation.

Bowman's membrane is not conspicuous, its place being taken by

fibrillated material. Under a low power the substance proper of the cornea is seen to consist of a densely lamellated structure, the lamellæ running parallel to each other, but are broader and irregular as compared with those of the normal cornea. Distinct fibrillated bundles run obliquely or transversely across the sections and often split into smaller bundles. Between the lamellæ are irregular narrow spaces that seem to contain nuclei; the inter-lamellar spaces are larger and plainer in the posterior strata of the sections. The substance proper seems to be avascular. In thicker sections (10 microns) the lamellæ are seen to be composed of fine and coarser fibrillæ that interlace rather irregularly and the interfibrillar and interlameller spaces contain connective tissue cells with large flattened nuclei (corneal corpuscles). Their number is not increased. The posterior basal membrane is absent over one half of the posterior surface of the cornea, its place being taken by lamellated material; the posterior endothelial layer is absent completely and its place is taken by an irregular layer of yellowish and brownish pigment granules and masses of varying thickness; whether the brownish pigment is all enclosed in cells or not could not be determined. "The diagnosis would be, hyperplasia of the substance proper of the cornea (keloid) with epitheleosis of the anterior surface and a pigment layer upon the posterior surface due to prolapse of the iris."

Dr. Wescott after an extended search of the literature was only able to find two cases which at all resembled his case. One is reported by R. Simon in the *Centralblatt für practische Augenheilkunde*, 1882. page 193, the other by I. Szokalski, Warsaw, in the *Annales d' Oculistique*, 1865, page 209. He thinks the term keloid as applied to this case might be open to criticism. For histological reasons it might perhaps be called a case of chronic inflammatory hyperplasia; but in its genesis it certainly resembles keloid.

Dr. Lyman Ware reported a *Case of Panophthalmitis following Cataract Extraction*, dacryocystitis being present at the time of the operation. The conjunctivitis and dacryocystitis were treated with nitrate of silver and other astringents without special benefit, and it was not until a solution of formalin, 1 to 5000, was used that any improvement took place. Five months after the patient was first seen a preliminary iridectomy was done on both eyes with good recovery, the eyes not being bandaged, and the formalin solution used three or four times a day. Two months later the cataract was extracted from the right eye. The wound was made at the sclero-corneal margin,

coming out well back in the conjunctiva, making a good flap. The after-treatment consisted of washing the eye with a solution of formalin three times a day and having it covered with a wad of absorbent cotton soaked in the same solution. For the first two days the eye had all the appearances of making a good recovery. No pain was present and the wound was perfectly clean. On the third day the wound began to show signs of infection. The cornea soon became involved, panophthalmitis set in and the eye was totally lost. Under ordinary circumstances Dr. Ware would not have ventured to operate on the cataract until several months had elapsed after the apparent cure of the dacryocystitis, but as the man had been blind so long, was old and feeble and thought he could not return again to the city, and especially as the formalin solution seemed to control the dacryocystitis so well, he thought he was justified in making the attempt to restore vision.

Discussion.—Dr. A. B. Hale thought an operation for cataract should never be done if there was the least trace of dacryocystitis. In many chronic cases it was advised to excise the tear sac, the extraction being postponed until the wound had healed.

Dr. W. Franklin Coleman mentioned a case of extraction where conjunctivitis, with muco-purulent discharge, was present, and yet a good result followed. A preliminary iridectomy was done followed, in two weeks, by extraction.

Dr. Edward L. Holmes had the same experience in similar cases.

Dr. Horace M. Starkey said that the only case of suppuration after cataract extraction in his experience happened in a case similar to that of Dr. Ware. The wound did well for 72 hours and then suppuration set in with destruction of the eyeball.

Dr. Gradle asked if any member present had tried obliteration of the tear duct with the galvano-cautery.

Dr. W. T. Montgomery has closed the punctum with a hot wire. He thought that in cases of cataract extraction complicated with conjunctivitis a preliminary iridectomy should be done, and he believed that there is much less danger of infection if the incision be made downwards and with a conjunctival flap, followed by flushing the eyeball with boracic acid solution.

Dr. Holmes asked the most recent method of destroying sac.

Dr. A. B. Hale thought the Kiel method gave the best results—by cutting the sac out.

Dr. W. Franklin Coleman enquired if any member present had

tried Fick's method of chloride of zinc injections into the sac, thereby obliterating it.

Dr. A. B. Hale has tried it but stenosis resulted.

Dr. J. Elliott Colburn removed six sacs by the Kiel method with good results.

Dr. H. Gradle has noticed that where the patient complains of lachrymation only when exposed to the wind the chances of a permanent cure are better than where the watering is continuous. In cases of stenosis he divides everything with the knife and does not depend on reducing stenosis by pressure.

Dr. W. T. Montgomery has had similar experience to Dr. Gradle, in that the duct closes up immediately after passing the probe alone and cannot even inject solutions with the syringe.

A Case of Paralysis of the Third Nerve was presented by Dr. W. H. Wilder. H. B. aged 25. First seen Feb. 19, 1896. Mother died at age of 26, of cancer. Patient contracted syphilis five years ago. December 25th, 1895, he first had diplopia, followed soon after by ptosis of the left upper lid, coming on suddenly without previous pain except slight frontal headache. At times there were attacks of dizziness. Examination shows paralysis of external muscles supplied by the third nerve. Pupils react to light and convergence and the patient can accommodate to 4½ inches. R. V. $\frac{6}{6}$; L. V. $\frac{6}{9}$. No fundus changes. The lesion is probably in the nucleus of the third nerve, although it is uncommon for a nuclear palsy to be unilateral.

Not until this patient had taken a dose of seventy-five grains of potassium iodid, three times a day, was any effect seen on the syphilitic paralysis. Then power began to return to the levator palpebræ and as the dose was increased the superior rectus began to act; then the inferior oblique, inferior rectus and internal rectus, in the order mentioned. At present he is taking 160 grains of the iodid at each dose or one ounce a day. Dr. Wilder presented him chiefly as an illustration of the fact that the curative effects of potassium iodid are not exhausted with moderate or even with large doses, and to show what may be accomplished in syphilitic paralysis by the administration of heroic doses of the drug.

Dr. Wilder also presented the following *Case of Thrombosis of the Retinal Vein*. Mr. E. G., 55 years of age, and apparently in perfect health, noticed on Friday, January 15th, at about 1.30 that the sight of the left eye had failed completely. There was no pain accompanying this trouble. When he was first seen, about thirty-six

hours later, there was absolute blindness of the left eye. The pupil did not react directly to light, but reacted consensually and also to accommodation. Ophthalmoscopic examination showed pronounced edema of retina. The outline of the optic disc could not be distinguished. The veins were enormously distended and tortuous, filled with dark colored blood, and had in places a sausage shape. The arteries were obscured in many places and seemed about the normal calibre; numerous hæmorrhages were seen scattered throughout the retina. These appeared to be in the fibrous layer and were striated and frequently fan shaped, in places covering the vessels. The vision of the right eye was normal with Sph. + 2 D. The patient said he had kidney disease several years before, but an examination of the urine showed no albumin. There seemed to be a roughness of the first sound of the heart over the apex, and the second sound was accentuated at the base. At the present time he has slight perception of light downwards to the temporal side. The swellings and hæmorrhages in the retina have disappeared in a great measure; the veins have become smaller and have changed in places into white cords. These are seen best in the region of the optic disc. The arteries are also smaller than normal. It seems almost unquestionable that we have here to deal with a case of Thrombosis of the central retinal vein.

Dr. Casey Wood presented a patient suffering from *Paralysis of the Ocular Muscles due to Lead Poisoning*. The patient, aged 49, a painter, has had several attacks of lead colic, the first five years ago, followed in two years by an attack of vertigo coming on suddenly one morning. He was then unconscious for half an hour and had pain through his head for two days at the end of which time he complained of diplopia, and in three weeks noticed that his left eye turned out. There is no history of syphilis or injury to the head. At the present time L.V. is $\frac{2}{5}$; R.V. $\frac{2}{3}$; both unimproved by glasses. There is complete left *Ophthalmoplegia Externa*, with the exception of the external rectus and possibly the superior oblique. Ptosis is most marked when patient is not fixing. Pupils react very sluggishly to light and accommodation. With the ophthalmoscope few fundus changes are visible, but the outlines of the papilla are not clean cut; it has a woolly appearance. F. of V. in both eyes are decidedly contracted for white and colors. Dr. Sanger Brown reports that, with the exception of the oculo-motor pareses and optic nerve defects, there is nothing abnormal about his nervous apparatus. Dr. Arthur Elliott found urine and saliva practically normal and free from traces of lead.

Dr. J. Elliott Colburn presented a *Case Resembling Nephritic Retinitis*, in a boy, who when first seen had loss of vision in the right, with lowered vision in the left eye. Slight convergent squint has been present since early childhood. He had just recovered from typhoid fever when the blindness set in. The ophthalmsocope showed characteristic whitish spots, with hæmorrhages, as seen in retinitis of nephritic origin, although the patient has had no nephritis.

C. P. PINCKARD,
Secretary.

SECTION ON OPHTHALMOLOGY.

College of Physicians of Philadelphia.

Meeting January 19, 1897. Dr. William F. Norris, President, in the chair.

Dr. Clarence A. Veasey read, by invitation, a paper on *Binasal Hemianopsia*. A woman, aged 54, had noticed gradual failure of vision for five months, and, two months earlier, slight attacks of nausea and vomiting for three weeks. At the time of the examination there was slight tremor and vertigo. Three weeks before coming under observation the vision suddenly declined in R. to l. p., in L. to $\frac{1}{180}$. There was no history of syphilis or tumors and no impairment of hearing, speech, or memory. Wernicke's hemianopic pupillary sign was present. Tn. The ophthalmoscope showed a low grade of double neuro-retinitis, more marked in R., indicating a long-existing interstitial optic-neuritis. The blood and urine were normal. Binasal hemianopsia was the prominent symptom. In the R. the macula was included in the blind half and the line of demarcation between the blind and preserved fields was distinctly vertical. In the L. the macula was included in the preserved half, which expanded in its upper part towards the nasal side. The field for red in the L. was fan-shaped and included the macula, and here the blind portion encroached slightly above and below on the temporal side. Both fields were concentrically contracted. Central vision improved for a short time under treatment, but the fields became more and more concentrically contracted and preserved their hemianopic character. Death ensued within a few months. An autopsy, which was refused, would have probably shown a bilateral inflammation of the trunks of the optic nerves in front of the chiasm extending backward to the chiasm and more marked symmetrically on each side of the latter.

Discussion.—Dr. G. E. de Schweinitz: I have seen several cases. The first, originally described by Dr. H. C. Wood, had faint light perception in one eye, and in the other the field of binasal hemianopsia. The second was a girl of sixteen, who had symptoms of basilar meningitis, high choked discs, vomiting, nausea and staggering gait, intense headache, and loss of both nasal fields. The third case, a girl of 20, was one of brain-tumor. She also had high choked discs, very imperfect vision, and binasal hemianopsia. After death a large basal tumor was found. The last of the cases is an illustration of the symptom occurring in spinal cord disease like that reported by Bull and Lang. A miner, 55 years old, a hard drinker, with a specific history, had blanched discs, spastic gait and exaggerated knee-jerks, and binasal hemianopsia. The lesion probably was an interstitial change in front of the chiasms. I am uncertain whether these cases ought to be classed among the hemianopsias or in some other category.

Dr. G. C. Harlan: There was at one time a good deal of discussion of Binasal hemianopsia, with reference to its bearing upon the theory of semidecussation in the optic chiasm. It is impossible to explain it by any single lesion and this fact has been alleged as a weak point in the semidecussation theory. Bitemporal hemianopsia can be accounted for by a lesion in front of the chiasm, involving the inner halves of the optic nerves, or behind the chiasm involving the inner halves of the optic tracts; but no single lesion can be so placed as to satisfactorily explain binasal hemianopsia. In preparing a paper on hemianopsia some years ago I was unable to find a detailed account of any case of binasal hemianopsia quite free from complication, and Schoen had stated that there was at that time no entirely incontestible cases on record. I believe that this statement still holds good—that there is no case with similar fields on each side sharply defined by vertical lines of demarcation, such as we meet with in homonymous bilateral hemianopsia.

Dr. G. Oram Ring read a paper on *The Application of the Roentgen Rays in the Diagnosis of Foreign Bodies in the Vitreous.* Two radiographs, showing the presence and the approximate location in the vitreous of a piece of metal, and the patient upon whom Mule's operation had been performed, were exhibited. Eighteen months previously a piece of steel had entered the right eye through the cornea, producing a tear in the iris, cataract, and complete blindness. The eye had become subjcet to attacks of ciliary inflammation, and recently the left eye had shown signs of sympathetic irritation. The steel

surrounded by exudate could not be dislodged from its position in the ciliary body by the Hirschberg magnet, and evisceration was performed and the glass sphere inserted. Very little reaction followed.

Discussion.—Dr. H. F. Hansell: The case I reported in the discussion in December was exposed for eight minutes, and the skiagraph shows exactly the position of the foreign body in relation to the shadow of the bone; but this picture demonstrates what mine does not, namely, that the Rœntgen rays will cast the shadow of a piece of metal lying in any part of the vitreous. This method is extremely valuable and now almost essential in the diagnosis of the presence and composition of foreign bodies.

Dr. George Friebis: I prefer decidedly evisceration to enucleation when feasible, and am gratified to find the reaction may be insignificant.

Dr. C. A. Oliver: It must be remembered that should the vitreous contain blood-clots the magnet must be brought almost in contact with the metal before the latter can be moved from its position; and, again, should the metal, during its passage through the vitreous, fall from the magnet, it may pursue a direction entirely different from that in which it had been carried by the magnet.

Dr. Edward Jackson exhibited two cases of *Preservation of the Eye, with Good Vision after the Removal of Fragments of Steel from the Vitreous by Means of the Magnet.* Both patients were young men injured by fragments from hammers. One had been shown to the Section shortly after the extracton was done, three years ago. The wound of entrance through the insertion of the internal rectus muscle was enlarged and an incision made in the vitreous with the Graefe knife in the direction of the foreign body, which lay on the retina at the bottom of the eye. The operation was followed by some detachment of the retina, retinitis, and a general hyalitis. At one time the vision was reduced to counting fingers within one foot, but it slowly improved until now it equals $\frac{3}{4}$ partly, although the pigmentation and the exudation in the retina, even in the region of the macula, are quite marked and a slight local detachment exists at the original site of the foreign body.

In the second case the chip of steel entered through the cornea and iris, close to the periphery. Hemorrhage at first prevented its exact location, and the injury was treated with atropin and ice, locally, and rest in bed. In two days the media were quite clear. The lens, the edge of which could be seen through the coloboma in the iris, en-

tirely escaped injury. The piece of steel was found lying slightly in front of the retina (3—4 D.), two disc diameters below the optic nerve. An incision was made between the inferior and internal recti and the foreign body extracted with the magnet. A protruding portion of the vitreous was clipped off. Ten days later the eye with its correcting lens, + 3s⌒+2.75c. had nearly equal vision with the other, which required a similar glass. At the end of the month there remained some opacities in the vitreous and a marked area of choroidal atrophy in the part adjoining the point from which the foreign body had been removed. This atrophy was distinct ten days after the injury. Vision equal in the two eyes.

Dr. F. M. Perkins exhibited a *Case of Congenital Microphthalmos.* The patient was a young woman with no significant history. The right eye was very much smaller than the left and was entirely blind. Vision in the left was of full acuity. No other part of the body was congenitally deficient.

Discussion.—Dr. Chas. Shaffner: I have seen several cases of microphthalmos that without exception have been associated with lack of development of the corresponding side of the face.

Dr. S. D. Risley presented briefly the clinical notes of *Two Cases of Persistent Asthenopia* with progressive change in the corneal curvature and increase of refraction without the occurrence of posterior staphyloma. A notable feature in one case was a marked, almost sudden increase of the corneal astigmatism as shown by the ophthalmometer, and the disappearance at the same time of a hitherto persistent esophoria of six degrees for distance.

Dr. G. E. de Schweinitz described a *Case of Acute Syphilitic Tarsitis* occuring in a man about 30, between the eighth and nine months after the primary infection. Both eyes were affected.

Also, a *Case of Suppurative Tarsitis* occurring in a physician aged 40, in which without evident cause a suppuration appeared in the right lid occupying the position of the tarsus, which was enormously thickened. Five points of suppuration appeared in the margin of the lid, and when the tissue between these points was incised, a slough, apparently including the tissue of the tarsus, was removed. The surrounding glandular and connective tissues were also included in the morbid process.

Also, a *Case of Ectropion Uveæ.* The overflow of the uveal pigment was in the upper and outer portion of the pupillary margin. The patients clinical history indicated that an injury was the cause of this condition, although there was no external scar.

Discussion.—Dr. C. A. Oliver: In the case of ectropion uvea it is possible to follow the minor circle of the iris along the border of the pigment. A number of small depressions is noticeable that possibly originate in the posterior limiting membrane, and the vascular ridges are still present, running from the larger to the smaller circle. When the pupil is contracted there is an eversion of the retinal pigment, so that the pigmented circle is completed.

Dr. G. C. Harlan showed a patient with a *Cilium in the Anterior Chamber.* It had recently been introduced through a wound at the lower corneal margin, inflicted by a piece of steel. The iris was adherent in the cicatrix. The cilium was stretched across the pupil with its bulb on the nasal and its point on the temporal side of the iris. The patient had made a good recovery. Dr. Harlan had reported two other cases in the Wills' Hospital reports two years ago. In none of these cases did the cilia seem to cause irritation. He thought that simply as a foreign body the presence of a cilium in the anterior chamber was harmless. The danger is from the engrafting upon the iris of epithelial cells carried in with the bulb. This had, in a number of reported cases, given rise to epithelial or "pearly" tumors of the iris, which sometimes appeared years after the accident.

Discussion.—Dr. Oliver: There is pictured by Meyer, in the *Centralblatt f. Augenh.*, January, 1889, two cilia which remained in the anterior chamber thirteen years without creating reaction.

Dr. Oliver gave the details of an *Operation for the Cure of Cicatricial Ectropium from Antral Disease.* The case was that of a fourteen-year-old girl who in infancy had had an alveolar abscess in the right upper jaw, followed by the formation of a fistulus sinus, which remained open and discharged until she was nine years old. At the time of examination it was found that the entire inferior orbital margin was lost. The overlying skin and superficial tissues were dragged deeply inward into a series of bands, whilst the lower lid was so everted that the lower cul-de-sac was visible. The operations pursued were those of first freeing the bands subcutaneously by a tenotome introduced far out in the temporal region, followed by three repetitions of Dieffenbach operation along a Szymanowski cut, and later the excision and filling in by suturing, of a triangular area in the upper temporal region, thus almost entirely relieving the deformity without the appearance of any external cicatrices.

Also, an *Operation for Cicatricial Ectropium with Advancement of the Levator Palpebræ.* The patient was an eight-year-old boy, who four

weeks before being seen was hooked in the left eye by a cow's horn in such a way that almost the entire conjunctiva of the upper lid and cul-de-sac were everted, nearly three-fourths of the tarsus having been lost. The upper inner part of the ciliary border of the lid was bound down to two dense superficial cicatrices. To remedy this deformity the bands of adhesion were loosened, a broad wedge was cut out of the prolapsed and redundant mucous membrane and stitched together, the lids were set into proper position by a series of sutures which extended through the entire lid substance, and the internal angle was fixed by a deeply placed double thread. To remedy the drooping of the lid, the only defect left, the false and irregular attachment of the broad tendon of the levator muscle was reached by a series of dissections through the skin, the orbicularis fibres and the deeper lying cicatricial tissues of the upper lid. The muscle was then secured by two strong sutures loosened from its false attachment far back and up beneath the orbital ridge, and lowered and attached to the remaining narrow rim of tarsus running along the ciliary border. The wound healed without any disturbance and the lid movement became as good as that of the fellow eye.

Also, a case and water-color sketch by Miss Washington, illustrating Nordenson's views of Leber's theories regarding the origin of *Rupture of the Retina in Retinal Detachment.* The case was that of a 53 year-old myope, who had the condition well marked for a period of more than a year without history of traumatism or relevant dyscrasia.

HOWARD F. HANSELL,
Clerk of Section.

THE

OPHTHALMIC RECORD

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EDITORIALS.

A PLEA FOR THE MORE GENERAL USE OF THE OPHTHALMOSCOPE.

During the last fifteen years the modification in the methods of ophthalmic practice have greatly benefited both the patient and the practitioner, and a systematic use of ophthalmometry and skiascopy have greatly facilitated the selection of proper glasses in cases of refraction and both have come to be considered almost as a necessity in those perplexing cases of a mixed character, while in the application of these methods such difficulties as may have arisen have been surmounted, so that with the array of ingenious devices and improvements upon the existing models in use, results are more accurate and more speedily obtained. In the determination of heterophoric conditions the old fashioned method of frequently changing the prism in the trial frame has now given way to the more convenient rotary prism, and the trial frame itself has likewise yielded place to a more pretentious and stable competitor. As proof of the popularity of these objective methods may be taken their ready adoption and the enthusiasm displayed by the advocates of this or that procedure or of some particular piece of apparatus. This spirit of progress, displayed by the younger men and the easy acceptance of existing conditions by those who are fortunately more capable of deciding by their longer professional activity are commendable, nevertheless by depending so much upon these more modern methods of diagnosis are we not somewhat in danger of allowing a valuable and formerly much used method to be neglected and thereby, possibly, rendering ourselves less acutely sensitive to very

slight fundus changes? With the introduction of the refraction ophthalmoscope came the possibility of viewing an upright magnified image of the fundus, and by proper application of its optical possibilities, of examining the interior of the eye at different planes and thus enabling one to form an estimate of the condition of the refraction of the eye. When this was the only method of supplementing the trial case the very difficulties met with in becoming skillful in its use were in themselves a splendid means of training the observer to accuracy in general ophthalmoscopic work. As a rule too much is usually expected of objective tests and when after trial they fall short of expectations aroused by those who are presumably especially familiar with their use they are apt to be disappointing, but, although one may never hope to attain the degree of excellence of certain individuals in the use of the upright image in determining errors of refraction still persistence in its use in this respect will ultimately be of the greatest benefit to the conscientious worker in general ophthalmoscopy.

W. D. H.

HOW SHALL WE TREAT THE OPTICIAN?

As the time for medical meetings approaches, the advocacy of reforms connected with our profession should be emphasized.

One of the conspicuous ophthalmologic evils that should be annihilated is the performing of refraction work by persons not properly qualified to *practice medicine*. This matter might as well be handled without gloves, in spite of the unprincipled effrontery of the offenders and the ignorant support of the laity, who always stand in their own light when great reforms for their benefit are advocated.

The study of refraction and its errors, with the coincident questions involving ocular motility, constitutes the profoundest problem in ophthalmology. Its intricacies have taxed the brightest intellects, and it may be truthfully said that only a chosen few have thoroughly mastered the subject. If this be true, the practical application of such evolved truths upon the human eye should be permitted only to those persons who have acquired a comprehensive knowledge of the anatomy, physiology and pathology of the eye, together with some special training in the study of refraction, its errors, etc.

It may be remarked, in this connection, that the eye is not an optical machine, nor a kingdom set off by itself and amenable to individual laws and government. It is a part of the body corporate, and must always be so considered and treated. We must remember

the frequent association of ocular affections with other diseases, and the constant occurrence of intra-ocular lesions only to be diagnosed by ophthalmoscopic and other examinations. It is certainly a *terra incognita* to one depending merely upon optical and visual tests for a diagnosis.

If it be true that correcting, or attempting to correct, errors of refraction is working in a true realm of ophthalmology, it is also true that any one doing such work is practicing ophthalmology. Any one practicing ophthalmology is practicing medicine, and no one should be allowed to practice medicine without a license in states possessing adequate state laws. Therefore the individual who assumes to do refraction work without a medical license is practising medicine without a license, and is a legal offender against the state, and should be held responsible.

Usage does not make wrong right. The barber at one time was the recognized surgeon and dentist. The druggist, a few years back, virtually practised medicine. Within the recollection of us all, any one might practice medicine wherever and whenever he chose without a diploma. But were these usages right? Emphatically, no! And yet the correction of these evils was opposed by those malevolently interested and by the ignorant public, for whose benefit improving laws have been passed. Therefore the protest of the optician who feels it to be his vested right to "fit glasses" should be disregarded, and the opinions and prejudices of the ignorant public, who always oppose the progress of advanced thought, should be disregarded, and the matter should be placed upon its proper basis.

The term "optician" has been used rather broadly, and includes traveling "refractionists," those doing business in department and jewelry stores, and those resident and prescription-filling opticians with a strong predilection toward refraction work in a "back parlor."

There are many opticians (for which we are profoundly grateful) who do a legitimate prescription business, and who make no feature of refraction work, only selling a pair of glasses now and then on their own responsibility as they are *compelled* to. They recognize that the optical profession is an honorable and exalted calling, and one taxing their time and ability to correctly follow. Such men are an honor to their profession, and have a comprehensive idea of its uses and limitations, and will (it may be confidently asserted) rejoice at any and all procedures that aim at an eradication of this evil.

Let this matter be brought up at some of the meetings this year, and, peradventure, a remedy may be obtained.

The opticians should at least purify their own ranks, and see that laws are passed, by which those seeking to dispense (*not prescribe*) glasses in a given state must receive a license to do so by a board of optical examiners.

A man desiring to be a dentist, a druggist, or a horse doctor, must present proper credentials, but any one with a few weeks of desultory instruction, or no instruction at all, may become an optician and assume the right to plunge into the study of refraction—the profoundest subject of ophthalmology. F. A.

WHAT SHALL BE DONE WITH THE OPTICIAN? ANOTHER VIEW OF THE MATTER.

This question seems to be disturbing the minds of many oculists, especially in the smaller cities. My own opinion is that the less done in the way of organized interference with his spectacle-fitting work, the better. There is no doubt that most of it is not strictly accurate and that occasionally, in the case of active disease of the eye, precious time is lost through the optician's attempt to remedy the trouble with glasses. But the effort to prevent this by law is, for the present, at least, a mistake. The great majority of the laity and even a large part of the medical profession regard the optician very much as the lower classes of foreigners regard the midwife, namely, as a person who, in a large proportion of cases, can take the place of the physician, at a much lower cost; and the attempt to interfere with his work will be certain to fail, with the result, secondarily, of much unjust criticism of the motives prompting the effort. Many persons use glasses obtained from opticians with perfect comfort and occasionally the lenses prescribed by the oculist, for some reason, give less satisfaction than those from the optician; and as long as the expense of glasses from the latter is so much less than for the advice of an oculist plus the ordinary price of glasses, the average person, unless there is some influence to the contrary, is apt to give the optician at least one chance.

This suggests the question whether it is any more than right, on accepting a patient's fee, to take a reasonable amount of pains to save him unnecessary expense for his glasses. The practice of writing a prescription and allowing the patient to have it filled by some optician whose work and prices the oculist does not control is certainly objectionable. The work, though as a rule accurate, may through an oversight be incorrect; and the price charged is often exorbitant,

considering that the optician has spent no time in fitting the case. Both these objections may be obviated by sending the patient to an optician who will agree to fill all prescriptions at very little above the wholesale rate, all work being returned to the oculist for inspection; or by the oculist himself getting the glasses for the patient at wholesale cost, letting him understand exactly what is paid for the glasses and what for professional services, thus avoiding the idea that the oculist is in the spectacle-selling business. To the writer, it furthermore seems no more than reasonable to agree that if the lenses need changing within a year or two no extra charge will be made for ascertaining what change is required. This of course entails some extra work, to be done for nothing, but it really amounts to very much less than would naturally be expected and is quite insignificant in comparison with the increased satisfaction given to ones patients and the decided advantage which it affords from a scientific standpoint. One is apt, after prescribing a pair of lenses, to think that if nothing more is heard from the patient for some months he must be doing well, while in reality he may simply have gone to some other oculist or, if the lenses have given good satisfaction for many montha, he may, to save expense, have gone to an optician who, with the first lenses as a starting point, may be able to make the required change without difficulty. The agreement to keep track of these changes without extra charge, for a reasonable length of time, to a large extent does away with these sources of error and allows the oculist to form a much more accurate estimate of the results of his work and of the natural history of his cases.

H. G.

THE REGULATION OF "OPTOMETRY," IN NEW YORK STATE.

An effort is being made in the state of New York to create a new and separate specialty under the pretense of "regulating" the practice of "optometry" by legislation. The movement is led by C. F. Prentice, of New York, an antagonist of the medical profession, and for years the "oculist" of his own establishment, and by A. J. Cross, also of New York, who has made himself more or less conspicuous through his self-laudatory and pretentious advertisements in Philadelphia, Buffalo, New York and other places which he has visited. They have an energetic organ in the *Optical Journal*, edited by Frederick Boger, with which to manufacture public sentiment. They have gathered

around them sympathetic opticians and organized a "state society" by means of which their efforts may be united and strengthened.

The practice of "optometry" by those not licensed to practice medicine is undoubtedly a violation of the medical-practice laws of the state and these ambitious gentlemen seek to protect themselves by the legalization of such practice under the pretense of "regulating" it.

Last year they attempted thus to "regulate" this business and failed. This year the effort is renewed and happily with the same fate in view. The proposed "regulation" provides for the appointment of a board of examiners by the Regents of the University of the State of New York; the passing of an examination by this board which "*shall confine its examinations to such knowledge as is essential to the practice of optometry;* the payment of twenty-five dollars; and registering. It exempts all now practicing "optometry" who register; *persons who sell spectacles or eyeglasses without making pretensions to scientific knowledge or skill in adapting to the eye;*" and "*all physicians who are or hereafter shall be registered and practicing in this state.*"

The standard of qualification here proposed may mean little to the optician and much to the physician; but as the examining board is to be selected from opticians, it would naturally conform to their knowledge and views,—a standard far too low to protect the public. When men formulate a bill with such meager requirements and such sweeping exemptions, it looks as if they were willing to do anything and concede everything, providing "optometry" be legalized, and they be given the privilege of practicing it "without fear or favor." That there may be no mistake as to what is desired, the bill defines "optomery" to signify the "*employment of subjective or objective mechanical means, or both, to determine the accommodative and refractive states of the eye and the scope of its functions in general for the purpose of adapting glasses to the sight*" The use of mydriatics is here implied.

This bill has the support of a few misinformed persons, but mostly of those who see in it, directly or indirectly, another avenue to commercial gain, including the "refracting optician," the four-weeks "graduate optician" and the optical "schools," "colleges," and "institutes." It is opposed by legitimate opticians throughout the state, by the medical profession, and by all persons who understand that the practice of "optometry" is necessarily a "delusion and a snare" when not backed by medical knowledge and training.

"Optometry" is purely a medical subject and has been developed entirely by medical men, such as Donders, von Helmholtz, von Graefe,

Javal, Cuignet and others. It deals emphatically with *abnormal and diseased conditions*, and the findings always call for *therapeutic measures*, —sometimes in the form of glasses, sometimes in hygiene, sometimes in medicine, and sometimes in operations. Myopia is essentially a disease and often requires more than glasses, and more than "optometric" study. Hypermetropia and astigmatism are abnormalities which cause diseases (functional) outside of the eye, and the adjustment of "glasses to the sight" may be but a small part of the treatment required. Muscular errors which seem to be local may be due alone to constitutional affections. An "optometric specialist," unless medically informed, might do much harm by using mydriatics, or by delaying a case which should have prompt medical treatment, or by seeking to relieve reflexes or diseases which do not originate in the eye, or by failing to recognize certain diseases of the eye itself.

"Optometry" should not be legislated into the hands of unqualified persons. No department of medicine requires a larger range of knowledge, a more extended and technical training, and the exercise of more sound judgment than this. It belongs to medicine and to medical men, and to them alone, not for their sake, however, as has been asserted, but for the sake of the public. Neither should there be any compromise by conceding to the optician the right to prescribe for a certain class of cases. The prevailing methods of "testing eyes" by dealers in glasses is wrong and should be stopped rather than encouraged. The non-astigmatic presbyope with healthy eyes can usually select glasses for himself and requires no examination. But whoever needs an examination of his eyes has some abnormal condition or disease, and has no more business with an optician than a person with pneumonia has with a druggist.

If this bill should unfortunately become a law, a great army of "optometric" specialists and pretenders would arise in the Empire state, and their charlatanism would be equalled only by the nostrum-vendor and the travelling quack doctor. Already the Globe Optical Co. has its "Dr. Lawton's eye-lotion, a remedy for all eye diseases" which "all opticians and jewellers should keep," and the Spencer Optical Co. has its "improved German Eye-water" from a formula of Dr. Agnew, eqully as potent and all-embracing.

Such practice as this bill is intended to protect is contrary to the spirit actuating medical legislation in New York, and is inimical to the public good. Let it die. A. A. H.

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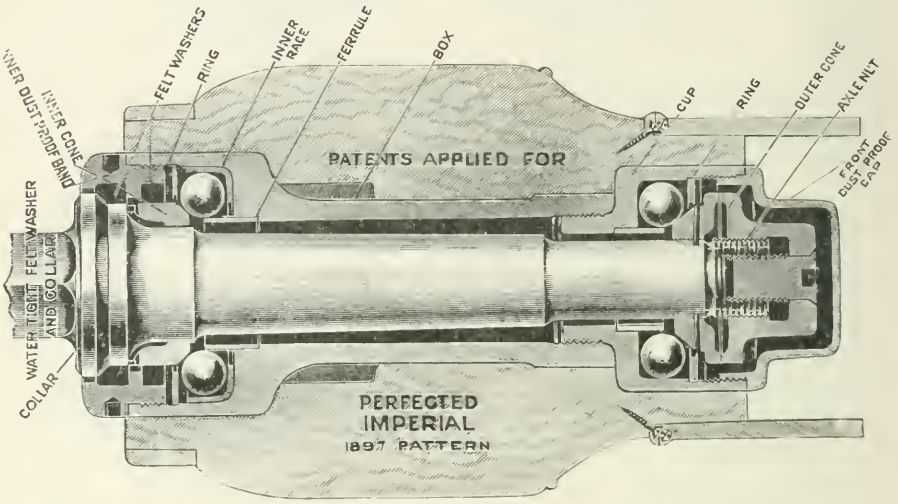

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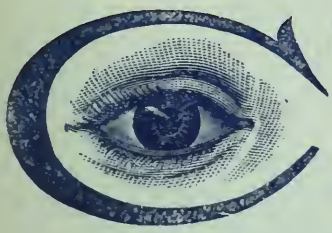

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